PARE PROJECT NO. 15096.00
REPORT

DRAFT TRAFFIC IMPACT ANALYSIS FOR THE HIGHFIELD VILLAGE LUNENBURG, MASSACHUSETTS

SUBMITTED TO:
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August 6, 2015

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Introduction

The following represents the traffic study completed for the construction of a single-family residential development in Lunenburg, Massachusetts. The proposed development is expected to consist of 67 homes and will be identified as Highfield Village. The proposed site location is on the south side of Northfield Road, just west of Stagecoach Road/Old Farm Road.

Access to and egress from the site are expected to occur via one driveway accessing Northfield Road approximately 3,300 feet east of its intersection with New West Townsend Road. The Highfield Village is planned to be constructed in two phases, with Phase 1 being the eastern portion of the site and Phase 2 being the western portion of the site.

Presented within are existing conditions in the vicinity of the project site, a safety analysis of the study area, an analysis of the traffic based on existing, future 2022 no-build and future 2022 build conditions, and proposed mitigation measures, where required. A locus map of the study area is provided in Figure 1 and a conceptual plan for the site is provided in Figure 2.

Data Collection

It is anticipated that the busy times for accessing the site will occur during the weekday commuter peak hours. As such, manual turning movement counts (MTMC) were completed on Wednesday, July 15, 2015, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. at the intersections of Chase Road (Route 13)/Northfield Road and New West Townsend Road/Northfield Road. An automated traffic recorder (ATR) count was also taken along Northfield Road, just west of Stagecoach Road/Old Farm Road, for a 48-hour period from Wednesday, July 15, 2015 to Thursday, July 16, 2015. The data obtained was utilized in determining the proposed trip distribution to and from the site and to complete a capacity analysis of the study area intersections.

Crash data for the roadway network in the vicinity of the project site was requested from the Town of Lunenburg Police Department for the three (3) year period from July 2012 through June 2015. Additionally, MassDOT crash data was obtained for the three (3) year period from January 2011 through December 2013.

The Town of Lunenburg Planning Department was contacted to determine the presence of planned or proposed developments within town that may generate additional traffic in the vicinity of this project. The department confirmed that there are currently no projects or developments in the planning or construction phase within the vicinity of the proposed Highfield Village site.

A field review of the study area was conducted, with geometric measurements taken and other field observations recorded at the proposed site driveway and at the significant intersections in the vicinity of the project site that provide access to and egress from the Highfield Village. The information obtained was used in the assessment of the study area.

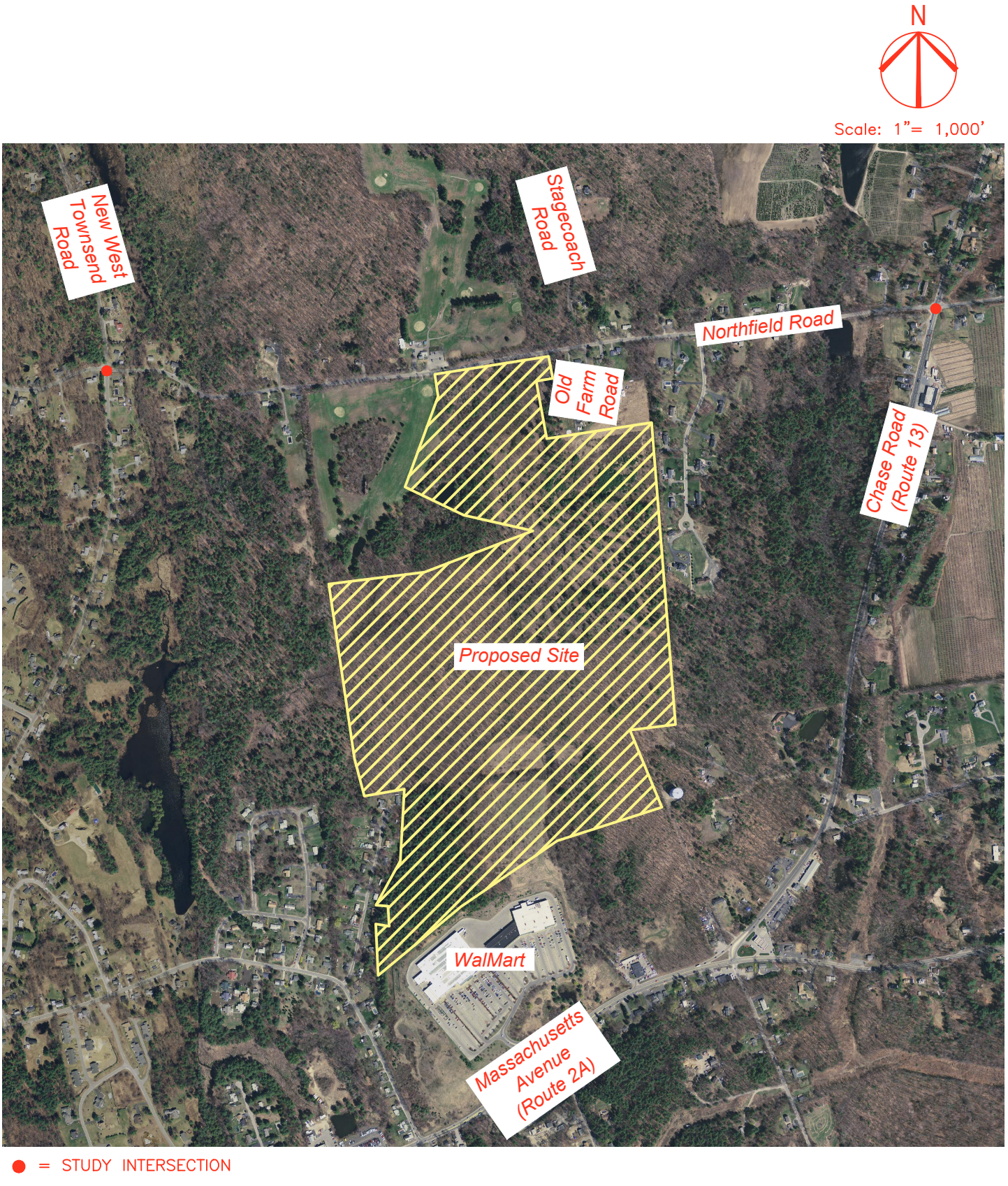

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Figure 1
Locus Map

Highfield Village
Lunenburg, Massachusetts

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INDEX SHEET
AT
HIGHFIELD VILLAGE
IN
LUNENBURG, MA

PREPARED FOR:
JEG HOLDINGS, LLC
P.O. BOX 5515
BEVERLY, MA 01915

REVISIONS			
NO.	DESCRIPTION	DATE	BY

DRAWN BY: MFP	CHECKED BY: BFM
DATE: 9/14/15	SCALE: 1"=250'
SHEET NUMBER: I1 OF I1	JOB NUMBER: 13510
COMPS: 9798	PLAN NUMBER: 31-D-32
PLAN REF(S): BY OTHERS	FIELD BOOK REF(S):

Existing Roadway Conditions

The proposed Highfield Village development will be located on the south side of Northfield Road in Lunenburg, Massachusetts. The proposed site will have one driveway accessing Northfield Road approximately 3,300 feet east of New West Townsend Road and immediately west of Stagecoach Road/Old Farm Road. Northfield Road generally runs in an east/west direction and connects extends from the Fitchburg, Massachusetts town line to Massachusetts Avenue (Route 2A).

Land use surrounding the proposed site consists primarily of wooded land and single-family residential neighborhoods. A golf course is located along Northfield Road approximately 900 feet west of the proposed site and a WalMart is located to the south of the site, at the junction of Chase Road (Route 13) and Massachusetts Avenue (Route 2A). Finally, the Turkey Hill Middle School is located along Northfield Road approximately 2.25 miles east of the proposed site. Though this is the nearest school to the site, it is still beyond the study area.

The study area is defined as the significant roadways and intersections in the vicinity of the proposed Highfield Village that may be impacted by traffic due to its construction. The following roadways and intersections are included in the study area for the proposed site:

Study Area Roadways

- Northfield Road from New West Townsend Road to Chase Road (Route 13)

Study Area Intersections

- Chase Road (Route 13) with Northfield Road – Unsignalized
- New West Townsend Road with Northfield Road – Unsignalized

In the area of the proposed site driveway, Northfield Road is approximately 20 feet wide with no edge treatment, i.e. berm or curbing. Northfield Road is classified as a Local Road and operates under town jurisdiction. There are no sidewalks or pedestrian accommodations along Northfield Road in the vicinity of the proposed site. There was no posted speed limit observed within the study area. However, a de facto speed limit of 30 miles per hour is assumed due to the thickly settled characteristic of the area.

Chase Road (Route 13) and Northfield Road

The intersection of Chase Road (Route 13) with Northfield Road forms a four-legged unsignalized intersection. Chase Road runs in a north/south direction and Northfield Road runs in an east/west direction. The Chase Road approaches to the intersection are uncontrolled, while Northfield Road operates under stop-sign control. Chase Road has 14-foot wide striped lanes with 6-foot shoulders in each direction. Northfield Road consists of a 12-foot wide lane in each direction with no striping. Sidewalks and other pedestrian accommodations are not present at the intersection. The posted speed limit on Chase Road is 45 miles per hour and there is no posted speed limit on Northfield Road approaching the intersection. Chase Road is classified as an Urban Principal Arterial and Northfield Road is a Local Road. Both roads operate under town jurisdiction.

Photo 1: Chase Road (Route 13) at Northfield Road, Looking South

New West Townsend Road and Northfield Road

The intersection of New West Townsend Road with Northfield Road forms a four-legged unsignalized intersection. New West Townsend Road runs in a north/south direction and Northfield Road runs in an east/west direction. The New West Townsend Road approaches to the intersection are uncontrolled, while Northfield Road operates under stop-sign control. New West Townsend Road has 12-foot wide striped lanes with no shoulders in each direction. Northfield Road consists of an 11-foot wide lane in each direction with no striping. Sidewalks and other pedestrian accommodations are not present at the intersection. New West Townsend Road has an advisory speed limit of 30 miles per hour and there is no posted speed limit on Northfield Road approaching the intersection. New West Townsend Road is classified as an Urban Collector and Northfield Road is a Local Road. Both roads operate under town jurisdiction.

Photo 2: New West Townsend Road at Northfield Road, Looking West

In addition to the roadway and intersection characteristics outlined above, the following observations were made during the site visit conducted mid-day on Wednesday, July 15, 2015:

- There were a few farm related vehicles.
- "No Parking" signs are located on the south side of Northfield Road approximately 900 feet west of the proposed site, at the Settlers Crossing Golf Course.

Existing Traffic Volumes

Based on the traffic count data gathered, the a.m. peak hour of the intersections in the study area occurred between 7:45 a.m. and 9:00 a.m. The a.m. peak hour at the intersection of Chase Road (Route 13) and Northfield Road occurred from 8:00 a.m. to 9:00 a.m., while the a.m. peak hour at the intersection of New West Townsend Road and Northfield Road occurred from 7:45 a.m. to 8:45 a.m.

Based on the traffic count data gathered, the p.m. peak hour of the intersections in the study area occurred between 4:30 p.m. and 5:45 p.m. The p.m. peak hour at the intersection of Chase Road (Route 13) and Northfield Road occurred from 4:45 p.m. to 5:45 p.m., while the peak hour at the intersection of New West Townsend Road and Northfield Road occurred from 4:30 p.m. to 5:30 p.m.

For a conservative approach, the peak hour data at each individual intersection was utilized for the capacity analysis.

To determine the need for a seasonal adjustment of the count data collected, the MassDOT count station data for location 3050, along Chase Road (Route 13), was reviewed. Based on count station data from the end of June, volumes during the summer peak were approximately 7% higher than the remainder of the year. Therefore, to complete a conservative analysis, no seasonal factor was applied to the existing count data.

The counts were performed during the summer break of the Turkey Hill Middle School, located along Northfield Road approximately 2.25 miles east of the proposed site. Though some traffic associated with the school may be added to the study area when school is in session, the school peaks would not fully coincide with the commuter peaks observed due to the school's start and end times of 8:10 a.m. and 2:40 p.m. The influx of school employees would occur prior to the a.m. commuter peak, with parent drop-offs trailing into the first 10 minutes of the commuter peak. In the afternoon, both the parent pick-up and egress of school staff would be complete prior to the p.m. commuter peak hour.

Existing a.m. and p.m. peak hour traffic volumes are shown in Figure 3.

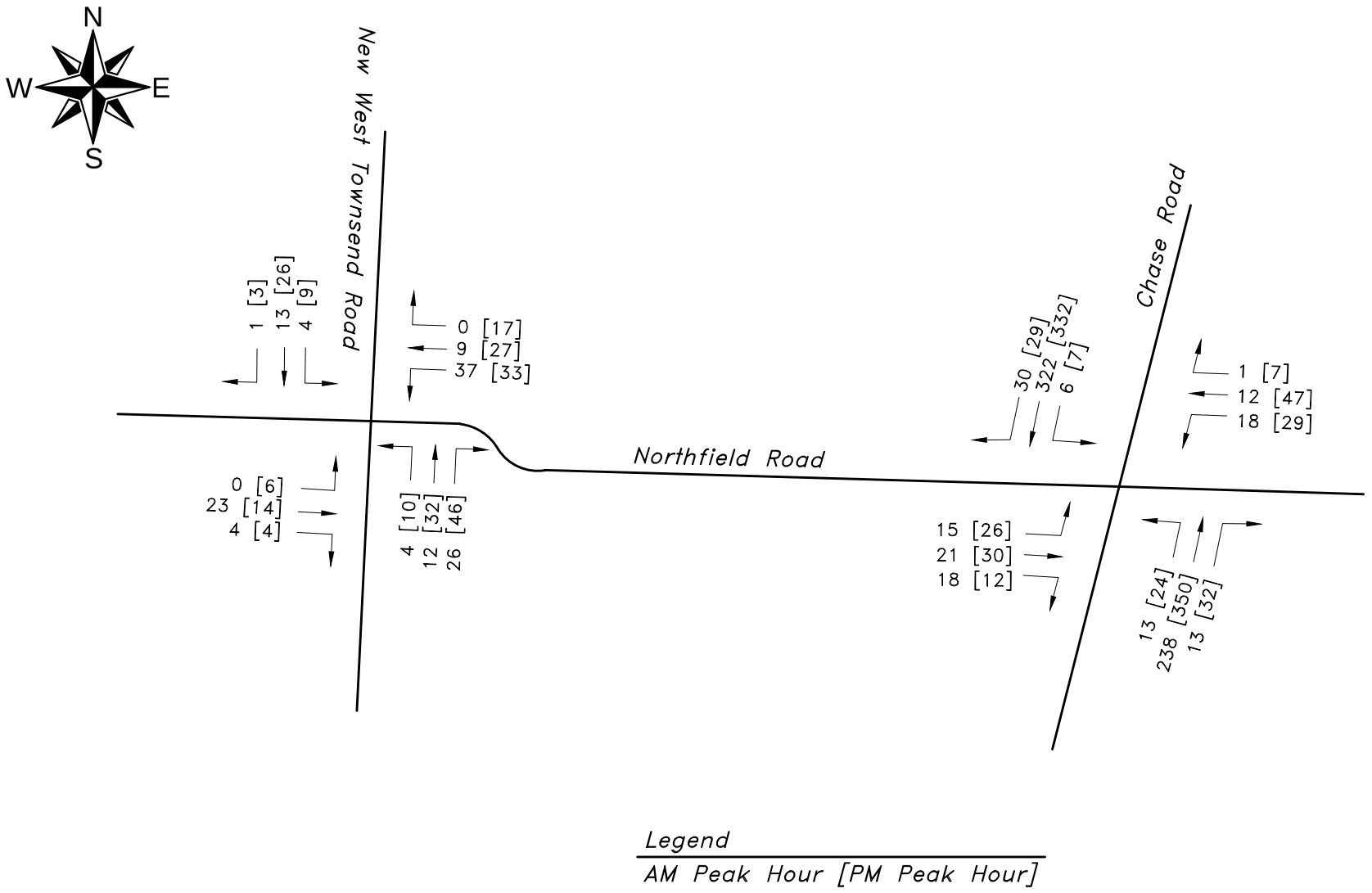

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Figure 3
Highfield Village
Existing Traffic Volumes
Weekday AM & PM Peak

Lunenburg, Massachusetts

Safety Analysis

Crash Data

Crash data was requested from the Town of Lunenburg Police Department for the three (3) year period of July 2012 through June 2015 in the vicinity of the proposed site. However, this data was not available within the timeframe of this study. In lieu of data from the town, crash data was downloaded from the MassDOT crash portal for the most recent three (3) years available, from January 2011 through December 2013. This data was reviewed to determine the presence of safety concerns within the study area.

According to the data reviewed there were 12 total incidents that occurred in the study area. Of these 12 total incidents, three (3) incidents occurred on the study area roadway not specifically at a study area intersection. Of these incidents, one (1) resulted in non-fatal injuries with a total of one (1) injured person and none resulted in fatal injuries. A breakdown of the incidents by type and number of injuries can be seen below in Table 1.

Table 1: Crash Summary for Study Area Roadways

Roadway	Non-Fatal Injuries	Fatal Injuries	Angle	Head-On	Object	Rear-To-Side	Rear-End	Side-Swipe	Single Vehicle
Northfield Road	1	0	0	0	0	0	0	0	3

According to the data received, the remaining nine (9) incidents occurred at or approaching a particular study area intersection. Of these incidents, one (1) resulted in non-fatal injuries with a total of two (2) injured persons and none resulted in fatal injuries. A breakdown of the incidents by type and number of injuries can be seen below in Table 2.

Table 2: Crash Summary for Study Area Intersections

Intersection	Non-Fatal Injuries	Fatal Injuries	Angle	Head-On	Other	Rear-To-Side	Rear-End	Side-Swipe	Single Vehicle
Chase Rd/ Northfield Rd	2	0	3	0	0	0	1	0	0
New West Townsend Rd/ Northfield Rd	0	0	4	0	0	0	0	0	1

The data received shows a higher occurrence of single vehicle incidents on roadway segments and a higher incident of angle and rear-end incidents at intersections. These are generally low severity incidents and are the most common types of incidents expected for each scenario. There were no trends or intensities of incidents noticed that would require or lend themselves to mitigation.

An additional measure of safety is crash rate, which assesses the number of crashes per year per million vehicles. For comparison, MassDOT calculates crash rates on both the statewide and district levels. These averages can be seen in Table 3.

Table 3: Crash Rate Averages

	Unsignalized Intersections	Urban Local Roadway
Statewide	0.60	1.90
District 3	0.66	-

The crash rate calculated at the intersection of Chase Road (Route 13) and Northfield Road was 0.37, which is well below both the statewide and district averages. The crash rate calculated at the intersection of New West Townsend Road and Northfield Road was 1.88. This value exceeds both the state and district averages due to the excessively low volumes entering the intersection. As noted, the incidents at this intersection are common for a stop-controlled intersection, and none resulted in injury or fatality. The crash rate calculated for the roadway segment of Northfield Road between New West Townsend Road and Chase Road (Route 13) was 1.50, which is well below the state average for a local road in an urban area.

A summary table of all crash data reviewed and the crash rate worksheets are provided in Appendix B.

Speed Study

A spot speed study was performed along Northfield Road to capture vehicle operating speeds. The speed data was collected on Wednesday, July 15, 2015 at the proposed site driveway.

A full report of the speed study data is provided in Appendix C and the results are summarized in Table 4.

Table 4: Speed Data Results for Northfield Road

	Posted Speed Limit	Average Speed	True Median (50th Percentile)	85th Percentile	10 MPH Pace	% over 30 MPH
Eastbound	-	34	32	39	30-39	79%
Westbound	-	33	33	37	30-39	76%

The speed data information gathered was used to determine the design speed for Northfield Road in the area of the proposed driveway. Typically, a roadway should be designed to accommodate the 85th percentile speed. Based on the results of the speed study analysis, a design speed of 40 miles per hour is recommended for Northfield Road.

Sight Distance

According to the American Association of State Highway and Transportation Officials (AASHTO) publication titled *A Policy on the Geometric Design of Highways and Streets, Sixth Edition 2011*, the minimum safe stopping sight distance (SSD) for a 40 mile per hour speed is 305 feet. The minimum required intersection sight distance (ISD) for a 40 mile per hour speed performing a left turn is 445 feet and performing a right turn is 385 feet.

The available sight distance was measured from the proposed site driveway during the field observations conducted on Wednesday, July 15, 2015. Sight distance to the west was limited by a horizontal curve approximately 825 feet away, located at the west end of the golf course parking lot. Sight distance to the east was limited by a vertical crest curve approximately 600 feet away, located at 914 Northfield Road. Stopping sight distance and intersection sight distance requirements at the proposed site driveway are met in both directions. The results of the sight distance analysis are summarized in Table 5.

Table 5: Sight Distance Summary

		Required SSD (ft)	Measured SSD (ft)	Required ISD (ft)	Measured ISD (ft)
West Greenwich Senior Housing Driveway	To the East	305	600	385	600
	To the West	305	825	445	825

SSD – Stopping Sight Distance
ISD – Intersection Sight Distance

Future Conditions

To account for background growth along the roadways within the vicinity of the project site, the existing traffic volumes were projected over a seven-year horizon from 2015 to 2022. Recent Census data for the Town of Lunenburg was reviewed to determine the appropriate growth rate. The available Census data showed an increase in population from 2000 to 2010 of less than 4%. To provide a conservative analysis of the project area, a growth rate of 0.5% per year was used for the seven-year projection. A copy of the available Census Data can be found in Appendix D.

As the Town has confirmed there is no other development proposed in the study area, no additional volumes were added to those projected.

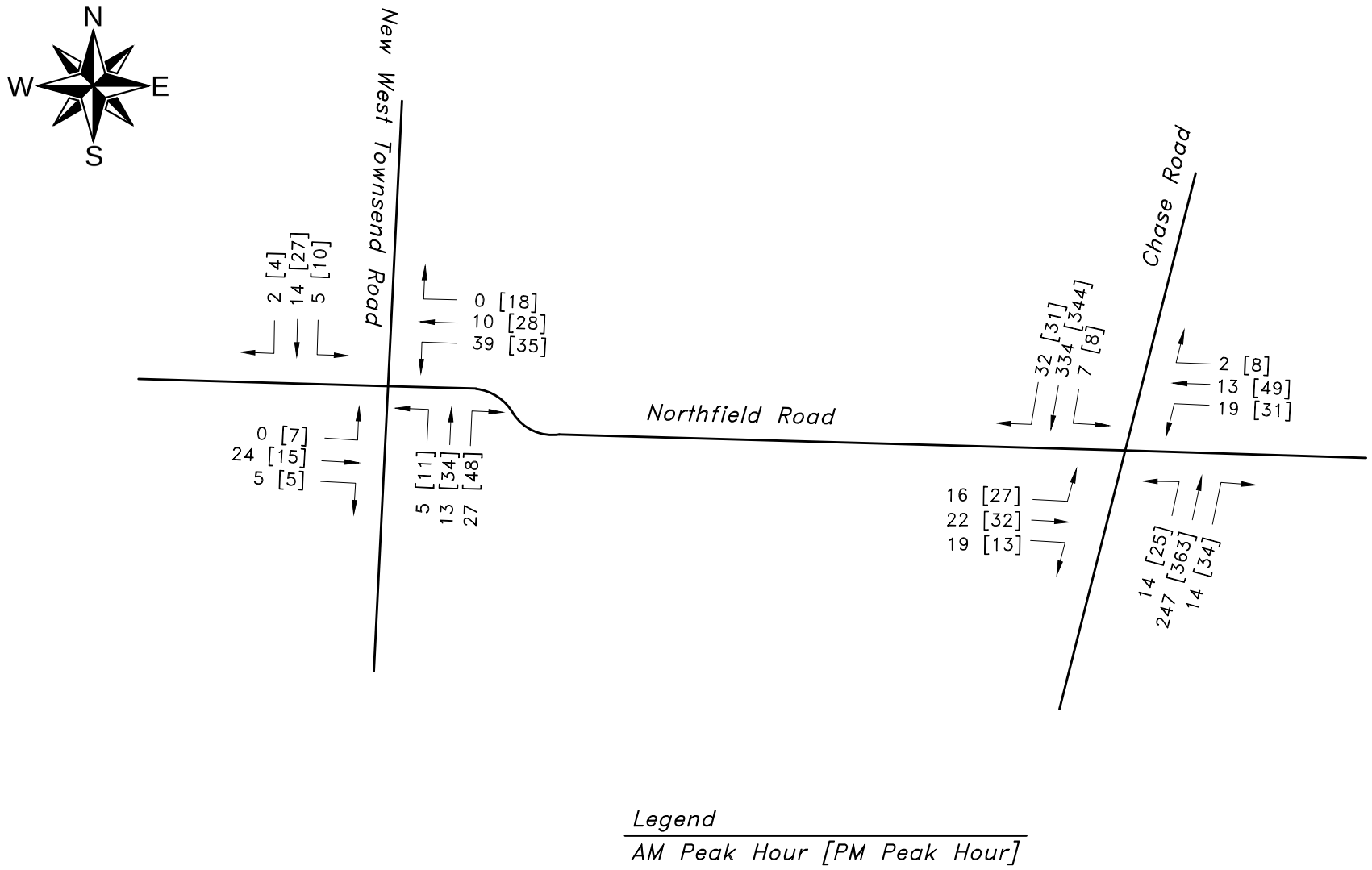
Traffic volumes for the a.m. and p.m. peak hours of the future 2022 no-build condition are provided in Figure 4.

Build Conditions

The future 2022 build condition represents the future 2022 no-build condition plus traffic associated with the proposed Highfield Village.

Site Description
The Highfield Village will be comprised of 67 single-family houses on lots ranging from 0.7 to 1.5 acres. Access to and egress from the site are expected to occur via a single driveway located off of Northfield Road. The proposed site driveway abuts the eastern side of the property and is expected to have one lane entering and one lane exiting with no separation.

Past the entrance, a circulation road continues around the perimeter of the site with homes on either side. There will also be two cul-de-sac areas stemming off of the circulation road. Day-to-day parking will be accommodated within individual driveways.



Legend

AM Peak Hour [PM Peak Hour]

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Figure 4
Highfield Village
No-Build Traffic Volumes
Weekday AM & PM Peak

Lunenburg, Massachusetts

Trip Generation

Trip generation for particular land uses are typically calculated using rates provided in the Institute of Transportation Engineers *Trip Generation Manual*. Trip generation rates for single-family detached housing developments are provided under land use codes (LUC) 210 – Single-Family Detached Housing. Trip generation values were determined for three scenarios:

1) Weekday, Entire 24-hour period;
2) Weekday, A.M. Peak Hour of Generator; and
3) Weekday, P.M. Peak Hour of Generator.

The results of the trip generation calculations are summarized in Table 6 below.

Table 6: Trip Generation

Time of Day	Entering Site Trips	Exiting Site Trips	Total Site Trips
Weekday (24-hour period)	363	364	727
Weekday (A.M. Peak Hour of Generator)	15	44	59
Weekday (P.M. Peak Hour of Generator)	48	27	75

Trip Distribution

Trip distribution was completed for the Highfield Village by adding the proposed traffic into the existing traffic stream using the existing travel patterns based on the ATR and MTMC data. Trip distribution calculations resulted in the following:

- 57% of the site generated traffic would travel from the west and to the east in the a.m.
- 43% of the site generated traffic would travel to the west and from the east in the a.m.
- 41% of the site generated traffic would travel from the west and to the east in the p.m.
- 59% of the site generated traffic would travel to the west and from the east in the p.m.

Traffic volumes for the a.m. and p.m. peak hours of site generated trips and the future 2022 build condition are shown in Figures 5 and 6 respectively.

Complete trip generation and distribution calculations are provided in Appendix E.

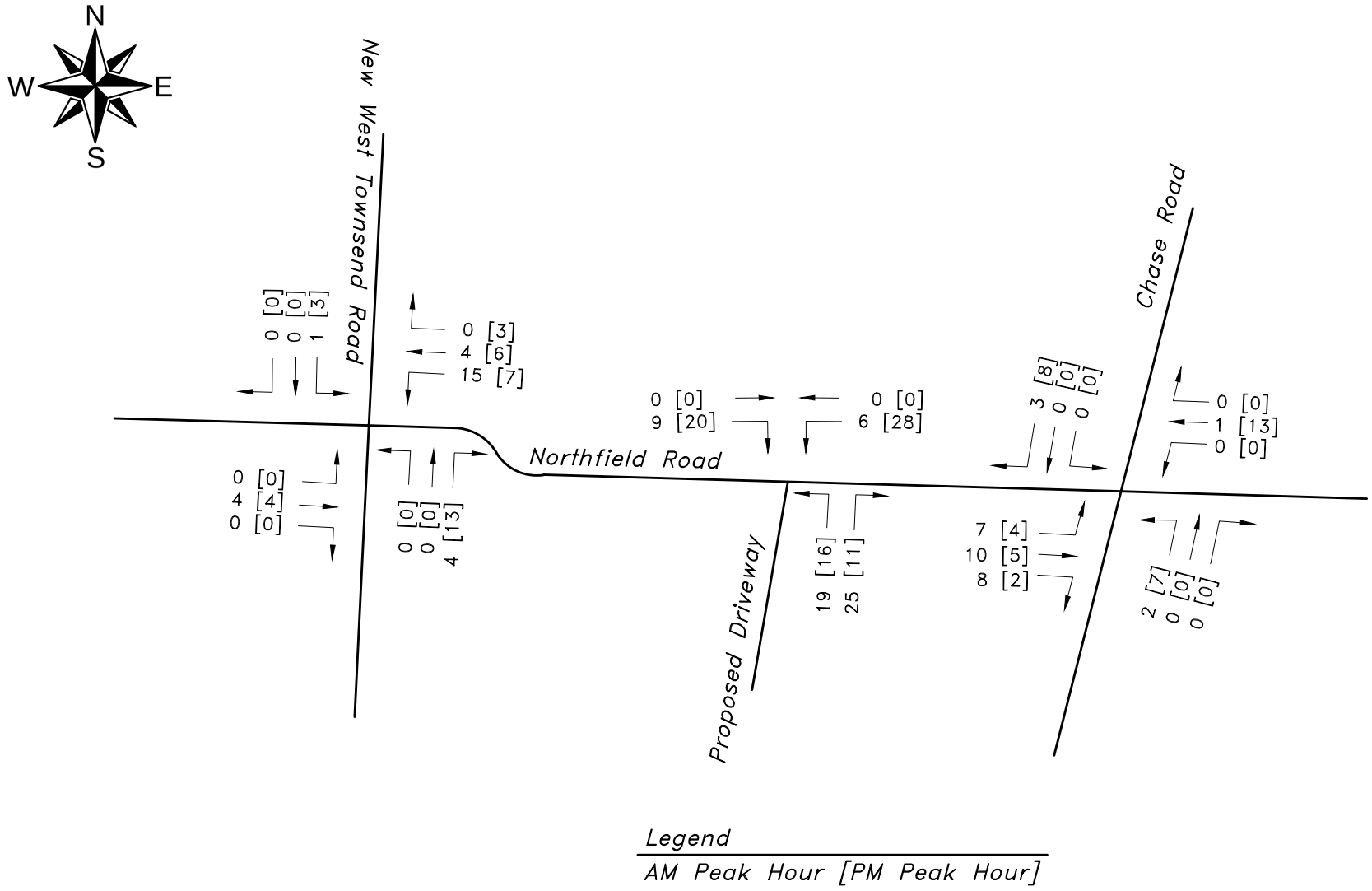

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Figure 5
Highfield Village
Site Generated Traffic Volumes
Weekday AM & PM Peak

Lunenburg, Massachusetts

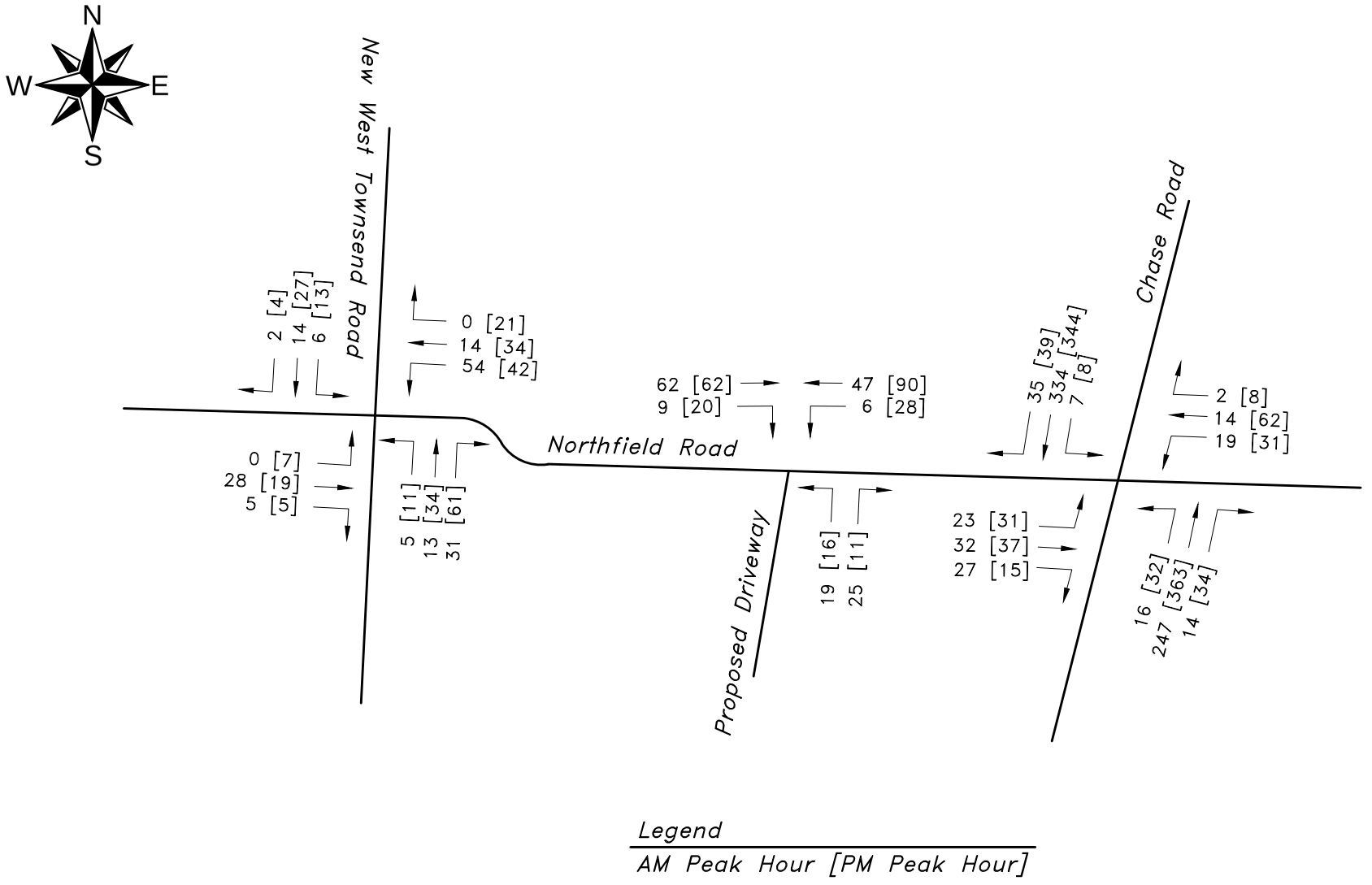

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Figure 6
Highfield Village
Build Traffic Volumes
Weekday AM & PM Peak

Lunenburg, Massachusetts

Capacity Analysis – Existing, Future No-Build, and Future Build Conditions

Capacity analysis was completed for all study intersections for existing, future 2022 no-build, and future 2022 build conditions. Capacity analysis characterizes intersections based on their level of service (LOS). LOS is a quality measure describing operational conditions within a traffic stream, generally in terms of service measures such as speed, travel times, traffic interruptions, etc. Six LOS are defined for unsignalized intersections, from A to F, with A representing the best operating conditions and F representing the worst operating conditions. The LOS criteria for signalized and unsignalized intersections are provided in Table 7 below.

Table 7: LOS Criteria for Unsignalized Intersections

	Unsignalized Intersection
LOS	Delay Time (sec/veh)
A	0-10
B	> 10-15
C	> 15-25
D	> 25-35
E	> 35-50
F	> 50

Chase Road (Route 13) and Northfield Road
At the unsignalized intersection of Chase Road (Route 13) with Northfield Road, the Chase Road approaches operate at LOS A and the Northfield Road approaches operate at LOS D or better with delays less than 27 seconds per vehicle. No change in LOS is expected, and delays will increase by no more than four seconds per vehicle compared to the no-build condition.

New West Townsend Road and Northfield Road
At the unsignalized intersection of New West Townsend Road with Northfield Road, the New West Townsend Road approaches operate at LOS A and the Northfield Road approaches operate at LOS B or better with delays less than 11 seconds per vehicle. No change in LOS is expected, and delays will increase by no more than one second per vehicle compared to the no-build condition.

Northfield Road and the Highfield Village Driveway
Under build conditions, the approaches to the proposed unsignalized intersection of Northfield Road with the Highfield Village driveway are expected to operate at LOS A with delays less than 10 seconds per vehicle.

Overall, the construction of the Highfield Village on the south side of Northfield Road is not expected to have a negative impact on the intersections in the vicinity of the site. Also, access to and egress from the site are expected to operate at high levels of service with minimal disruption to the existing flow of through traffic on Northfield Road.

Additionally, all approaches to the intersections of Chase Road (Route 13) with Northfield Road and Northfield Road with the site driveway operate at LOS C or better during the a.m. peak hour of the build condition. It is reasonable to assume that these intersections would still operate well under capacity with any increase in traffic associated with the Turkey Hill Middle School.

Tables 8 and 9 provide the capacity analysis results for all intersections during the a.m. and p.m. peak hours.

Table 8: A.M. Peak Hour LOS Table

		Weekday A.M. Peak Hour					
		Existing 2015		Future (2020) No-Build		Future (2020) Build	
		LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)	LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)	LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)
Northfield Street at New West Townsend Road							
Northbound	Approach	A (7.2)	0	A (7.2)	0	A (7.2)	0
Southbound	Approach	A (7.3)	0	A (7.3)	0	A (7.3)	0
Eastbound	Approach	A (9.6)	0	A (9.5)	0	A (9.6)	0
Westbound	Approach	A (9.5)	0	A (9.4)	0	A (9.6)	0
Northfield Road at Chase Road							
Northbound	Approach	A (8.5)	0	A (8.3)	0	A (8.4)	0
Southbound	Approach	A (8.3)	0	A (8.2)	0	A (8.2)	0
Eastbound	Approach	C (17.5)	1	C (15.6)	1	C (16.8)	1
Westbound	Approach	C (20.4)	1	C (17.8)	0	C (18.5)	0
Northfield Road at Site Driveway							
Northbound		-	-	-	-	A (9.1)	0
Westbound		-	-	-	-	A (7.4)	0

Table 9: P.M. Peak Hour LOS Table

		Weekday P.M. Peak Hour					
		Existing 2015		Future (2020) No-Build		Future (2020) Build	
		LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)	LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)	LOS (Delay, sec/veh)	95th Percentile Queue Length (veh)
Northfield Street at New West Townsend Road							
Northbound	Approach	A (7.3)	0	A (7.3)	0	A (7.3)	0
Southbound	Approach	A (7.4)	0	A (7.4)	0	A (7.4)	0
Eastbound	Approach	B (10.0)	0	A (9.9)	0	B (10.1)	0
Westbound	Approach	B (10.1)	0	B (10.0)	0	B (10.2)	0
Northfield Road at Chase Road							
Northbound	Approach	A (8.4)	0	A (8.3)	0	A (8.3)	0
Southbound	Approach	A (8.1)	0	A (8.2)	0	A (8.2)	0
Eastbound	Approach	D (26.8)	2	C (24.0)	1	D (27.5)	2
Westbound	Approach	D (25.8)	1	D (26.3)	2	D (30.0)	2
Northfield Road at Site Driveway							
Northbound		-	-	-	-	A (9.5)	0
Westbound		-	-	-	-	A (7.4)	0

Conclusions

The crash data reviewed from MassDOT for the study area indicated a minimal number of crashes on Northfield Road and at the major intersections directly east and west of the proposed site entrance. It is not expected that the additional traffic generated by the Highfield Village on the roadways adjacent to the site will have an impact on the safety of the roadways or create a safety concern.

The available stopping sight distances from the proposed site entrance exceed the AASHTO requirements for the 40 mile per hour selected design speed.

Level of service and delay impacts at the intersections surrounding the proposed Highfield Village are expected to be minimal. The approaches to all study intersections are expected to continue operating at favorable levels of service, with overall delay increases of less than four seconds per vehicle expected from the future no-build to the future build condition.

Based on the analysis, the proposed Highfield Village is expected to have minimal impact on the safety and operations of the roadways adjacent to the project site.

Recommendations

Although the traffic generated by the proposed Highfield Village development is not expected to affect the safety and operations of the roadway network within the study area, the installation of regulatory speed limit signs along Northfield Road, between New West Townsend Road and Chase Road (Route 13), could be considered to help control speeds near the proposed site driveway. These improvements would need to be reviewed and accepted by the Town.

Appendix A

Traffic Counts

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tel (781) 587-0086 cell (781) 439-4999

Northfield Road
west of Stage Coach Road
City, State: Lunenburg, MA
Client: Pare / A. Archer

04587Avolume
Site Code: 04587

Start Time	15-Jul-15 Wed	EB A.M.	EB P.M.	WB A.M.	WB P.M.	Combined A.M.	Combined P.M.	16-Jul- Thu	EB A.M.	EB P.M.	WB A.M.	WB P.M.	Combined A.M.	Combined P.M.
12:00		0	12	1	13	1	25		3	15	0	3	3	18
12:15		1	11	0	8	1	19		2	7	1	12	3	19
12:30		0	21	3	8	3	29		0	14	0	8	0	22
12:45		1	16	1	12	2	28		0	17	0	4	0	21
01:00		1	15	0	6	1	21		1	10	1	13	2	23
01:15		3	9	0	6	3	15		0	15	0	12	0	27
01:30		1	12	0	8	1	20		0	16	1	8	1	24
01:45		1	10	0	14	1	24		0	19	0	16	0	35
02:00		0	9	0	8	0	17		2	9	0	7	2	16
02:15		1	11	0	14	1	25		0	4	0	17	0	21
02:30		0	11	0	15	0	26		0	13	0	9	0	22
02:45		0	14	0	8	0	22		0	12	0	19	0	31
03:00		0	18	0	13	0	31		1	19	0	23	1	42
03:15		0	16	0	14	0	30		0	16	0	19	0	35
03:30		1	19	0	16	1	35		2	15	0	13	2	28
03:45		0	8	1	18	1	26		0	15	0	21	0	36
04:00		1	18	1	18	2	36		0	11	1	22	1	33
04:15		1	12	0	***20***	1	32		1	19	1	18	2	37
04:30		0	13	0	***23***	0	36		0	13	0	19	0	32
04:45		3	12	1	***25***	4	***37***		2	15	1	21	3	36
05:00		4	14	2	***22***	6	***36***		2	***16***	1	20	3	***36***
05:15		7	***21***	1	19	8	***40***		10	***14***	1	22	11	***36***
05:30		2	***17***	0	22	2	***39***		7	***12***	1	***17***	8	***29***
05:45		6	***19***	2	15	8	34		7	***25***	2	***22***	9	***47***
06:00		14	***17***	2	21	16	38		9	15	2	***21***	11	36
06:15		***22***	8	3	15	25	23		23	8	4	***25***	27	33
06:30		***13***	11	8	11	21	22		13	15	6	9	19	24
06:45		***17***	9	10	21	27	30		13	16	12	7	25	23
07:00		***15***	5	2	8	17	13		14	12	8	19	22	31
07:15		13	10	12	18	25	28		14	16	8	6	22	22
07:30		12	6	2	5	14	11		***21***	11	9	11	***30***	22
07:45		17	10	***10***	7	***27***	17		***15***	12	6	10	***21***	22
08:00		13	10	***11***	13	***24***	23		***13***	10	10	8	***23***	18
08:15		18	9	***15***	7	***33***	16		***18***	7	8	4	***26***	11
08:30		11	12	***17***	2	***28***	14		12	4	12	10	24	14
08:45		7	13	10	8	17	21		5	9	11	3	16	12
09:00		11	1	11	7	22	8		9	5	11	4	20	9
09:15		7	7	5	7	12	14		2	4	9	3	11	7
09:30		16	7	5	1	21	8		19	2	6	4	25	6
09:45		6	3	8	4	14	7		15	3	6	5	21	8
10:00		14	1	8	4	22	5		11	3	8	4	19	7
10:15		12	3	9	3	21	6		7	2	11	7	18	9
10:30		8	3	11	3	19	6		7	1	9	2	16	3
10:45		16	4	13	3	29	7		18	0	5	4	23	4
11:00		14	3	9	2	23	5		9	2	***11***	2	20	4
11:15		11	1	10	0	21	1		13	0	***10***	2	23	2
11:30		9	2	8	3	17	5		18	0	***8***	1	26	1
11:45		12	1	8	0	20	1		14	0	***17***	2	31	2
Total		342	494	220	518	562	1012		352	498	218	538	570	1036
Day Total		836		738		1574			850		756		1606	
% Total		21.7%	31.4%	14.0%	32.9%				21.9%	31.0%	13.6%	33.5%		
Peak		06:15	05:15	07:45	04:15	07:45	04:45		07:30	05:00	11:00	05:30	07:30	05:00
Vol.		67	74	53	90	112	152		67	67	46	85	100	148
P.H.F.		0.761	0.881	0.779	0.900	0.848	0.950		0.798	0.670	0.676	0.850	0.833	0.787

ADT	ADT 1,590	AADT 1,590

Transportation Data Corporation
Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Northfield Road
west of Stage Coach Road
City, State: Lunenburg, MA
Client: Pare / A. Archer

04587Avolume
Site Code: 04587

Start Time	15-Jul-15 Wed	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		0	12			1	13				
12:15		1	11			0	8				
12:30		0	21			3	8				
12:45		1	16	2	60	1	12	5	41	7	101
01:00		1	15			0	6				
01:15		3	9			0	6				
01:30		1	12			0	8				
01:45		1	10	6	46	0	14	0	34	6	80
02:00		0	9			0	8				
02:15		1	11			0	14				
02:30		0	11			0	15				
02:45		0	14	1	45	0	8	0	45	1	90
03:00		0	18			0	13				
03:15		0	16			0	14				
03:30		1	19			0	16				
03:45		0	8	1	61	1	18	1	61	2	122
04:00		1	18			1	18				
04:15		1	12			0	20				
04:30		0	13			0	23				
04:45		3	12	5	55	1	25	2	86	7	141
05:00		4	14			2	22				
05:15		7	21			1	19				
05:30		2	17			0	22				
05:45		6	19	19	71	2	15	5	78	24	149
06:00		14	17			2	21				
06:15		22	8			3	15				
06:30		13	11			8	11				
06:45		17	9	66	45	10	21	23	68	89	113
07:00		15	5			2	8				
07:15		13	10			12	18				
07:30		12	6			2	5				
07:45		17	10	57	31	10	7	26	38	83	69
08:00		13	10			11	13				
08:15		18	9			15	7				
08:30		11	12			17	2				
08:45		7	13	49	44	10	8	53	30	102	74
09:00		11	1			11	7				
09:15		7	7			5	7				
09:30		16	7			5	1				
09:45		6	3	40	18	8	4	29	19	69	37
10:00		14	1			8	4				
10:15		12	3			9	3				
10:30		8	3			11	3				
10:45		16	4	50	11	13	3	41	13	91	24
11:00		14	3			9	2				
11:15		11	1			10	0				
11:30		9	2			8	3				
11:45		12	1	46	7	8	0	35	5	81	12
Total		342	494			220	518			562	1012
Percent		40.9%	59.1%			29.8%	70.2%			35.7%	64.3%
Combined Total		836				738				1574	

Transportation Data Corporation
Mario Perone, mperone1@verizon.net
tel (781) 587-0086 cell (781) 439-4999

Northfield Road
west of Stage Coach Road
City, State: Lunenburg, MA
Client: Pare / A. Archer

04587Avolume
Site Code: 04587

Start Time	16-Jul-15 Thu	EB Morning	EB Afternoon	Hour Totals Morning	Hour Totals Afternoon	WB Morning	WB Afternoon	Hour Totals Morning	Hour Totals Afternoon	Combined Totals Morning	Combined Totals Afternoon
12:00		3	15			0	3				
12:15		2	7			1	12				
12:30		0	14			0	8				
12:45		0	17	5	53	0	4	1	27	6	80
01:00		1	10			1	13				
01:15		0	15			0	12				
01:30		0	16			1	8				
01:45		0	19	1	60	0	16	2	49	3	109
02:00		2	9			0	7				
02:15		0	4			0	17				
02:30		0	13			0	9				
02:45		0	12	2	38	0	19	0	52	2	90
03:00		1	19			0	23				
03:15		0	16			0	19				
03:30		2	15			0	13				
03:45		0	15	3	65	0	21	0	76	3	141
04:00		0	11			1	22				
04:15		1	19			1	18				
04:30		0	13			0	19				
04:45		2	15	3	58	1	21	3	80	6	138
05:00		2	16			1	20				
05:15		10	14			1	22				
05:30		7	12			1	17				
05:45		7	25	26	67	2	22	5	81	31	148
06:00		9	15			2	21				
06:15		23	8			4	25				
06:30		13	15			6	9				
06:45		13	16	58	54	12	7	24	62	82	116
07:00		14	12			8	19				
07:15		14	16			8	6				
07:30		21	11			9	11				
07:45		15	12	64	51	6	10	31	46	95	97
08:00		13	10			10	8				
08:15		18	7			8	4				
08:30		12	4			12	10				
08:45		5	9	48	30	11	3	41	25	89	55
09:00		9	5			11	4				
09:15		2	4			9	3				
09:30		19	2			6	4				
09:45		15	3	45	14	6	5	32	16	77	30
10:00		11	3			8	4				
10:15		7	2			11	7				
10:30		7	1			9	2				
10:45		18	0	43	6	5	4	33	17	76	23
11:00		9	2			11	2				
11:15		13	0			10	2				
11:30		18	0			8	1				
11:45		14	0	54	2	17	2	46	7	100	9
Total		352	498			218	538			570	1036
Percent		41.4%	58.6%			28.8%	71.2%			35.5%	64.5%
Combined Total		850				756				1606	
Total		694	992			438	1056			1132	2048
Percent		41.2%	58.8%			29.3%	70.7%			35.6%	64.4%
Combined Total		1686				1494				3180	
ADT		ADT 1,590			AADT 1,590						

Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15096.00
Recorded By: CG
Weather: Sunny, Dry, Warm

File Name : northfield at chase
Site Code : 00000000
Start Date : 7/15/2015

Groups Printed- Autos - Heavy Vehicles

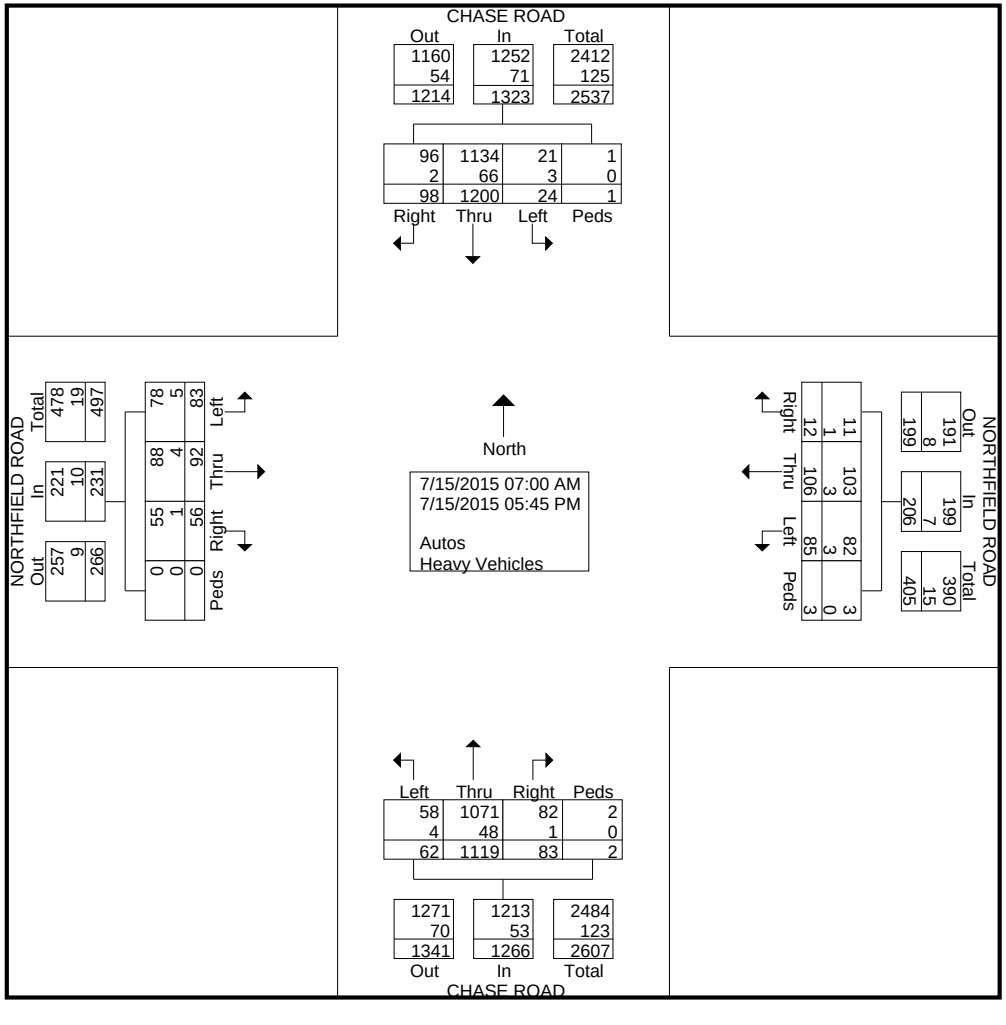
	CHASE ROAD From North					NORTHFIELD ROAD From East					CHASE ROAD From South					NORTHFIELD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	1	64	1	0	66	0	2	2	0	4	2	62	1	0	65	5	2	5	0	12	147
07:15 AM	6	60	2	0	68	1	2	3	0	6	1	47	2	0	50	1	9	6	0	16	140
07:30 AM	2	75	0	0	77	0	0	6	3	9	1	56	1	0	58	3	3	2	0	8	152
07:45 AM	4	66	1	0	71	1	3	2	0	6	3	56	1	0	60	2	5	6	0	13	150
Total	13	265	4	0	282	2	7	13	3	25	7	221	5	0	233	11	19	19	0	49	589
08:00 AM	7	66	2	0	75	0	5	5	0	10	2	55	2	0	59	5	8	2	0	15	159
08:15 AM	8	77	1	0	86	0	4	2	0	6	2	51	0	0	53	6	5	7	0	18	163
08:30 AM	9	70	1	0	80	1	1	6	0	8	2	64	6	0	72	4	5	4	0	13	173
08:45 AM	6	109	2	0	117	0	2	5	0	7	7	68	5	0	80	3	3	2	0	8	212
Total	30	322	6	0	358	1	12	18	0	31	13	238	13	0	264	18	21	15	0	54	707
*** BREAK ***																					
04:00 PM	10	70	3	0	83	0	8	5	0	13	11	82	5	0	98	4	10	6	0	20	214
04:15 PM	4	72	1	1	78	0	5	10	0	15	9	87	3	0	99	5	4	5	0	14	206
04:30 PM	6	55	2	0	63	2	15	5	0	22	8	75	8	1	92	2	5	5	0	12	189
04:45 PM	7	75	4	0	86	2	15	4	0	21	8	91	5	0	104	3	4	7	0	14	225
Total	27	272	10	1	310	4	43	24	0	71	36	335	21	1	393	14	23	23	0	60	834
05:00 PM	8	93	3	0	104	2	13	7	0	22	7	96	7	0	110	0	4	3	0	7	243
05:15 PM	5	109	0	0	114	1	10	9	0	20	7	88	4	1	100	6	7	14	0	27	261
05:30 PM	9	55	0	0	64	2	9	9	0	20	10	75	8	0	93	3	15	2	0	20	197
05:45 PM	6	84	1	0	91	0	12	5	0	17	3	66	4	0	73	4	3	7	0	14	195
Total	28	341	4	0	373	5	44	30	0	79	27	325	23	1	376	13	29	26	0	68	896
Grand Total	98	1200	24	1	1323	12	106	85	3	206	83	1119	62	2	1266	56	92	83	0	231	3026
Apprch %	7.4	90.7	1.8	0.1		5.8	51.5	41.3	1.5		6.6	88.4	4.9	0.2		24.2	39.8	35.9	0		
Total %	3.2	39.7	0.8	0	43.7	0.4	3.5	2.8	0.1	6.8	2.7	37	2	0.1	41.8	1.9	3	2.7	0	7.6	
Autos	96	1134	21	1	1252	11	103	82	3	199	82	1071	58	2	1213	55	88	78	0	221	2885
% Autos	98	94.5	87.5	100	94.6	91.7	97.2	96.5	100	96.6	98.8	95.7	93.5	100	95.8	98.2	95.7	94	0	95.7	95.3
Heavy Vehicles	2	66	3	0	71	1	3	3	0	7	1	48	4	0	53	1	4	5	0	10	141
% Heavy Vehicles	2	5.5	12.5	0	5.4	8.3	2.8	3.5	0	3.4	1.2	4.3	6.5	0	4.2	1.8	4.3	6	0	4.3	4.7

Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15096.00
Recorded By: CG
Weather: Sunny, Dry, Warm

File Name : northfield at chase
Site Code : 00000000
Start Date : 7/15/2015
Page No : 2



Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15096.00
Recorded By: CG
Weather: Sunny, Dry, Warm

File Name : northfield at chase
Site Code : 00000000
Start Date : 7/15/2015
Page No : 3

	CHASE ROAD From North					NORTHFIELD ROAD From East					CHASE ROAD From South					NORTHFIELD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 08:00 AM																					
08:00 AM	7	66	2	0	75	0	5	5	0	10	2	55	2	0	59	5	8	2	0	15	159
08:15 AM	8	77	1	0	86	0	4	2	0	6	2	51	0	0	53	6	5	7	0	18	163
08:30 AM	9	70	1	0	80	1	1	6	0	8	2	64	6	0	72	4	5	4	0	13	173
08:45 AM	6	109	2	0	117	0	2	5	0	7	7	68	5	0	80	3	3	2	0	8	212
Total Volume	30	322	6	0	358	1	12	18	0	31	13	238	13	0	264	18	21	15	0	54	707
% App. Total	8.4	89.9	1.7	0		3.2	38.7	58.1	0		4.9	90.2	4.9	0		33.3	38.9	27.8	0		
PHF	.833	.739	.750	.000	.765	.250	.600	.750	.000	.775	.464	.875	.542	.000	.825	.750	.656	.536	.000	.750	.834
Autos	29	297	4	0	330	1	11	15	0	27	13	225	11	0	249	18	19	14	0	51	657
% Autos	96.7	92.2	66.7	0	92.2	100	91.7	83.3	0	87.1	100	94.5	84.6	0	94.3	100	90.5	93.3	0	94.4	92.9
Heavy Vehicles	1	25	2	0	28	0	1	3	0	4	0	13	2	0	15	0	2	1	0	3	50
% Heavy Vehicles	3.3	7.8	33.3	0	7.8	0	8.3	16.7	0	12.9	0	5.5	15.4	0	5.7	0	9.5	6.7	0	5.6	7.1
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:45 PM																					
04:45 PM	7	75	4	0	86	2	15	4	0	21	8	91	5	0	104	3	4	7	0	14	225
05:00 PM	8	93	3	0	104	2	13	7	0	22	7	96	7	0	110	0	4	3	0	7	243
05:15 PM	5	109	0	0	114	1	10	9	0	20	7	88	4	1	100	6	7	14	0	27	261
05:30 PM	9	55	0	0	64	2	9	9	0	20	10	75	8	0	93	3	15	2	0	20	197
Total Volume	29	332	7	0	368	7	47	29	0	83	32	350	24	1	407	12	30	26	0	68	926
% App. Total	7.9	90.2	1.9	0		8.4	56.6	34.9	0		7.9	86	5.9	0.2		17.6	44.1	38.2	0		
PHF	.806	.761	.438	.000	.807	.875	.783	.806	.000	.943	.800	.911	.750	.250	.925	.500	.500	.464	.000	.630	.887
Autos	28	322	7	0	357	6	46	29	0	81	32	342	22	1	397	12	28	26	0	66	901
% Autos	96.6	97.0	100	0	97.0	85.7	97.9	100	0	97.6	100	97.7	91.7	100	97.5	100	93.3	100	0	97.1	97.3
Heavy Vehicles	1	10	0	0	11	1	1	0	0	2	0	8	2	0	10	0	2	0	0	2	25
% Heavy Vehicles	3.4	3.0	0	0	3.0	14.3	2.1	0	0	2.4	0	2.3	8.3	0	2.5	0	6.7	0	0	2.9	2.7

Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15092.00
Recorded By: CR
Weather: Sunny, Dry, Warm

File Name : northfield at new west townsend
Site Code : 00000000
Start Date : 7/15/2015
Page No : 1

Groups Printed- Autos - Heavy Vehicles

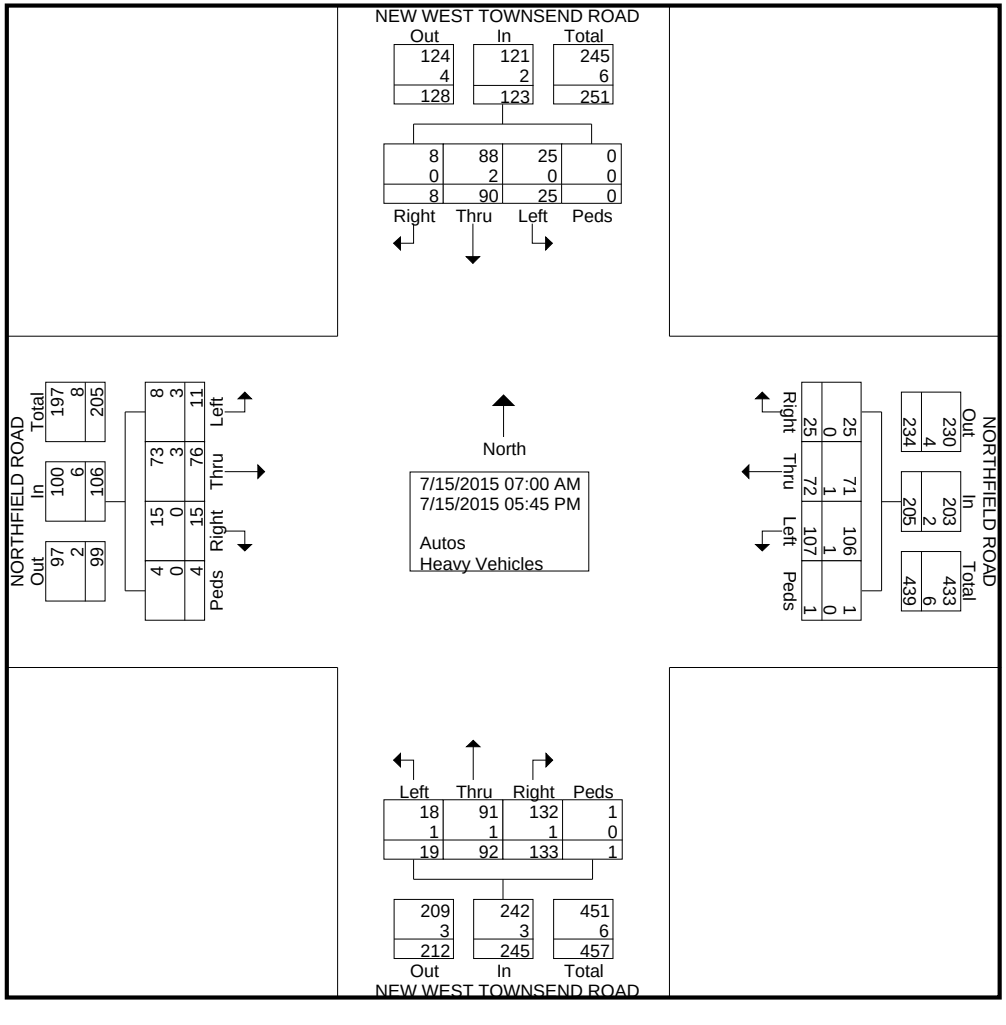
	NEW WEST TOWNSEND ROAD From North					NORTHFIELD ROAD From East					NEW WEST TOWNSEND ROAD From South					NORTHFIELD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
07:00 AM	0	3	1	0	4	0	2	2	0	4	10	2	0	0	12	1	6	0	0	7	27
07:15 AM	0	10	3	0	13	1	2	6	0	9	1	2	2	0	5	1	8	0	0	9	36
07:30 AM	0	8	1	0	9	0	1	0	1	2	8	4	0	1	13	2	3	0	0	5	29
07:45 AM	1	4	1	0	6	0	2	10	0	12	9	4	0	0	13	1	6	0	0	7	38
Total	1	25	6	0	32	1	7	18	1	27	28	12	2	1	43	5	23	0	0	28	130
08:00 AM	0	1	1	0	2	0	2	5	0	7	5	5	0	0	10	2	4	0	0	6	25
08:15 AM	0	4	2	0	6	0	0	12	0	12	9	2	2	0	13	0	6	0	0	6	37
08:30 AM	0	4	0	0	4	0	5	10	0	15	3	1	2	0	6	1	7	0	0	8	33
08:45 AM	0	6	1	0	7	0	3	4	0	7	1	3	1	0	5	1	5	1	0	7	26
Total	0	15	4	0	19	0	10	31	0	41	18	11	5	0	34	4	22	1	0	27	121
*** BREAK ***																					
04:00 PM	1	6	1	0	8	1	8	7	0	16	12	11	1	0	24	0	4	1	0	5	53
04:15 PM	0	9	0	0	9	1	3	3	0	7	7	17	1	0	25	1	5	0	0	6	47
04:30 PM	1	8	2	0	11	6	6	14	0	26	9	8	2	0	19	2	3	2	0	7	63
04:45 PM	1	6	2	0	9	3	7	7	0	17	14	7	1	0	22	0	5	0	0	5	53
Total	3	29	5	0	37	11	24	31	0	66	42	43	5	0	90	3	17	3	0	23	216
05:00 PM	1	10	1	0	12	4	8	8	0	20	10	10	2	0	22	0	2	3	0	5	59
05:15 PM	0	2	4	0	6	4	6	4	0	14	13	7	5	0	25	2	4	1	0	7	52
05:30 PM	2	3	3	0	8	3	8	10	0	21	11	6	0	0	17	1	5	1	1	8	54
05:45 PM	1	6	2	0	9	2	9	5	0	16	11	3	0	0	14	0	3	2	3	8	47
Total	4	21	10	0	35	13	31	27	0	71	45	26	7	0	78	3	14	7	4	28	212
Grand Total	8	90	25	0	123	25	72	107	1	205	133	92	19	1	245	15	76	11	4	106	679
Apprch %	6.5	73.2	20.3	0		12.2	35.1	52.2	0.5		54.3	37.6	7.8	0.4		14.2	71.7	10.4	3.8		
Total %	1.2	13.3	3.7	0	18.1	3.7	10.6	15.8	0.1	30.2	19.6	13.5	2.8	0.1	36.1	2.2	11.2	1.6	0.6	15.6	
Autos	8	88	25	0	121	25	71	106	1	203	132	91	18	1	242	15	73	8	4	100	666
% Autos	100	97.8	100	0	98.4	100	98.6	99.1	100	99	99.2	98.9	94.7	100	98.8	100	96.1	72.7	100	94.3	98.1
Heavy Vehicles	0	2	0	0	2	0	1	1	0	2	1	1	1	0	3	0	3	3	0	6	13
% Heavy Vehicles	0	2.2	0	0	1.6	0	1.4	0.9	0	1	0.8	1.1	5.3	0	1.2	0	3.9	27.3	0	5.7	1.9

Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15092.00
Recorded By: CR
Weather: Sunny, Dry, Warm

File Name : northfield at new west townsend
Site Code : 00000000
Start Date : 7/15/2015



Pare Corporation

8 Blackstone Valley Place
Lincoln Rhode Island, 02865
www.parecorp.com

Roadway: Northfield Road
PARE Project No: 15092.00
Recorded By: CR
Weather: Sunny, Dry, Warm

File Name : northfield at new west townsend
Site Code : 00000000
Start Date : 7/15/2015

	NEW WEST TOWNSEND ROAD From North					NORTHFIELD ROAD From East					NEW WEST TOWNSEND ROAD From South					NORTHFIELD ROAD From West					
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Int. Total
Peak Hour Analysis From 07:00 AM to 08:45 AM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 07:45 AM																					
07:45 AM	1	4	1	0	6	0	2	10	0	12	9	4	0	0	13	1	6	0	0	7	38
08:00 AM	0	1	1	0	2	0	2	5	0	7	5	5	0	0	10	2	4	0	0	6	25
08:15 AM	0	4	2	0	6	0	0	12	0	12	9	2	2	0	13	0	6	0	0	6	37
08:30 AM	0	4	0	0	4	0	5	10	0	15	3	1	2	0	6	1	7	0	0	8	33
Total Volume	1	13	4	0	18	0	9	37	0	46	26	12	4	0	42	4	23	0	0	27	133
% App. Total	5.6	72.2	22.2	0		0	19.6	80.4	0		61.9	28.6	9.5	0		14.8	85.2	0	0		
PHF	.250	.813	.500	.000	.750	.000	.450	.771	.000	.767	.722	.600	.500	.000	.808	.500	.821	.000	.000	.844	.875
Autos	1	12	4	0	17	0	9	37	0	46	26	12	4	0	42	4	21	0	0	25	130
% Autos	100	92.3	100	0	94.4	0	100	100	0	100	100	100	100	0	100	100	91.3	0	0	92.6	97.7
Heavy Vehicles	0	1	0	0	1	0	0	0	0	0	0	0	0	0	0	0	2	0	0	2	3
% Heavy Vehicles	0	7.7	0	0	5.6	0	0	0	0	0	0	0	0	0	0	0	8.7	0	0	7.4	2.3
Peak Hour Analysis From 04:00 PM to 05:45 PM - Peak 1 of 1																					
Peak Hour for Entire Intersection Begins at 04:30 PM																					
04:30 PM	1	8	2	0	11	6	6	14	0	26	9	8	2	0	19	2	3	2	0	7	63
04:45 PM	1	6	2	0	9	3	7	7	0	17	14	7	1	0	22	0	5	0	0	5	53
05:00 PM	1	10	1	0	12	4	8	8	0	20	10	10	2	0	22	0	2	3	0	5	59
05:15 PM	0	2	4	0	6	4	6	4	0	14	13	7	5	0	25	2	4	1	0	7	52
Total Volume	3	26	9	0	38	17	27	33	0	77	46	32	10	0	88	4	14	6	0	24	227
% App. Total	7.9	68.4	23.7	0		22.1	35.1	42.9	0		52.3	36.4	11.4	0		16.7	58.3	25	0		
PHF	.750	.650	.563	.000	.792	.708	.844	.589	.000	.740	.821	.800	.500	.000	.880	.500	.700	.500	.000	.857	.901
Autos	3	26	9	0	38	17	27	33	0	77	46	32	10	0	88	4	14	5	0	23	226
% Autos	100	100	100	0	100	100	100	100	0	100	100	100	100	0	100	100	100	83.3	0	95.8	99.6
Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1	1
% Heavy Vehicles	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	16.7	0	4.2	0.4

Appendix B

Safety Data

Highfield Village TIA
Lunenburg, MA
January 2011 to December 2013
Pare Project No. 15096.00 July
10, 2015

Report No.	Date	On Street	Intersecting Street	Directions of Travel	No. of Vehicles	Injuries	Fatalities	Weather Condition	Road Condition	Lighting	Crash Type
3163177	5/19/2012	CHASE ROAD	NORTHFIELD ROAD	EAST/SOUTH	2	0	0	CLEAR	DRY	DAYLIGHT	ANGLE
3550890	6/29/2013	CHASE ROAD	NORTHFIELD ROAD	SOUTH/EAST	2	0	0	CLEAR	DRY	DAYLIGHT	ANGLE
3550894	6/15/2013	CHASE ROAD	NORTHFIELD ROAD	EAST/NORTH	2	2	0	CLEAR	DRY	DAYLIGHT	ANGLE
3333369	11/8/2012	NORTHFIELD ROAD	CHASE ROAD	WEST	2	0	0	SNOW	SNOW	DAYLIGHT	REAR-END
3037052	2/13/2012	NEW WEST TOWNSEND ROAD	NORTHFIELD ROAD	WEST	2	0	0	CLEAR	DRY	DAYLIGHT	ANGLE
3267207	8/28/2012	NEW WEST TOWNSEND ROAD	NORTHFIELD ROAD	SOUTH/EAST	2	0	0	CLOUDY	DRY	DAYLIGHT	ANGLE
3370763	1/16/2013	NEW WEST TOWNSEND ROAD	NORTHFIELD ROAD	SOUTH/EAST	2	0	0	SNOW	SNOW	DAYLIGHT	ANGLE
3565434	7/5/2013	NEW WEST TOWNSEND ROAD	NORTHFIELD ROAD	SOUTH/EAST	2	0	0	CLEAR	DRY	DAYLIGHT	ANGLE
3375072	1/12/2013	NORTHFIELD ROAD	NEW WEST TOWNSEND ROAD	NORTH	1	0	0	CLEAR	DRY	DARK(L)	SINGLE VEHICLE
3310186	10/29/2012	NORTHFIELD ROAD	OLD FARM ROAD	EAST	1	0	0	RAIN	WET	DARK(L)	SINGLE VEHICLE
3284446	9/14/2012	NORTHFIELD ROAD		EAST	1	1	0	CLEAR	DRY	DAYLIGHT	SINGLE VEHICLE
2904438	2/28/2011	NORTHFIELD ROAD		EAST	1	0	0	HAIL	ICE	DAYLIGHT	SINGLE VEHICLE

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lunenburg, MA COUNT DATE : Jul-15

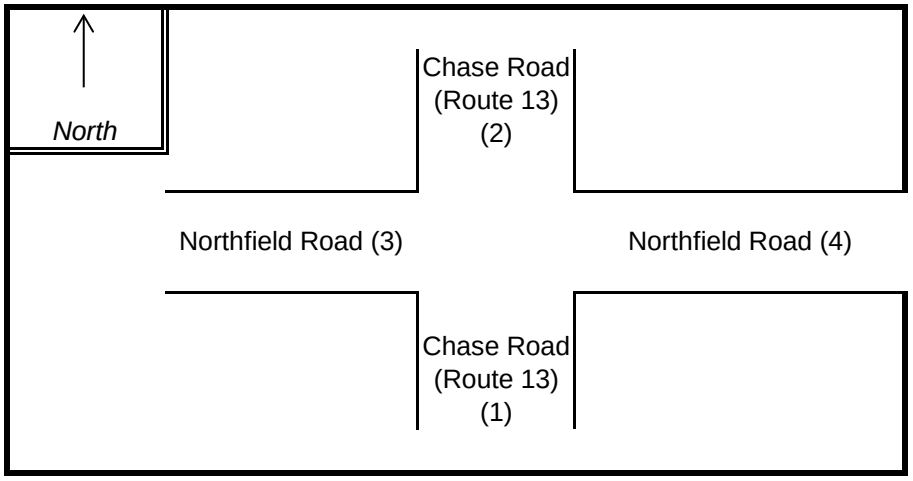
DISTRICT : 3 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : Chase Road (Route 13)

MINOR STREET(S) : Northfield Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	**1**	**2**	**3**	**4**	**5**	**Total Peak Hourly Approach Volume**
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/**PM**) :	407	368	68	83		**926**

" K " FACTOR : **0.093** INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **9,914**

TOTAL # OF CRASHES : 4 # OF YEARS : 3 AVERAGE # OF CRASHES PER YEAR (**A**) : **1.33**

CRASH RATE CALCULATION : **0.37** RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: PARE Project No. 15096.00 Jul-15

INTERSECTION CRASH RATE WORKSHEET

CITY/TOWN : Lunenburg, MA COUNT DATE : Jul-15

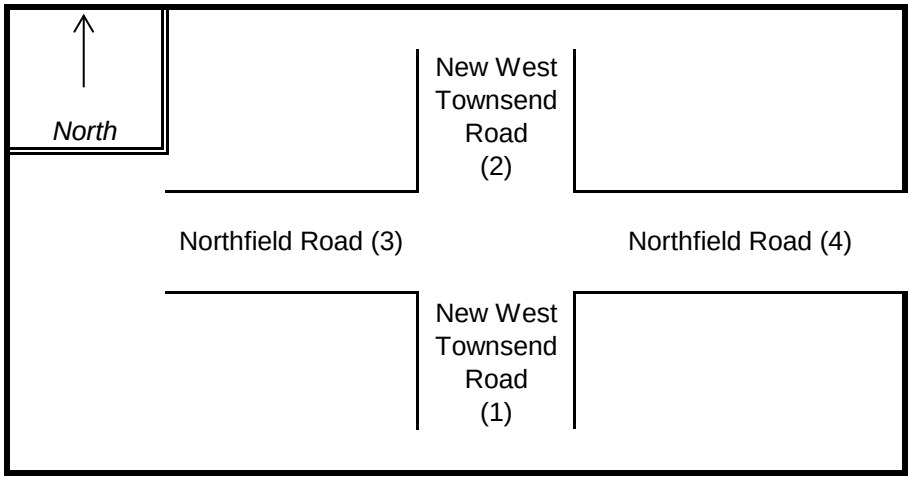
DISTRICT : 3 UNSIGNALIZED : X SIGNALIZED :

~ INTERSECTION DATA ~

MAJOR STREET : New West Townsend Road

MINOR STREET(S) : Northfield Road

INTERSECTION DIAGRAM (Label Approaches)



PEAK HOUR VOLUMES

APPROACH :	1	2	3	4	5	Total Peak Hourly Approach Volume
DIRECTION :	NB	SB	EB	WB		
PEAK HOURLY VOLUMES (AM/(PM)) :	88	38	24	77		227

" K " FACTOR : **0.093**

INTERSECTION ADT (**V**) = TOTAL DAILY APPROACH VOLUME : **2,430**

TOTAL # OF CRASHES : 5

OF YEARS : 3

AVERAGE # OF CRASHES PER YEAR (**A**) : **1.67**

CRASH RATE CALCULATION : **1.88**

RATE = $\frac{(A * 1{,}000{,}000)}{(V * 365)}$

Comments :

Project Title & Date: PARE Project No. 15096.00 Jul-15

SEGMENT CRASH RATE WORKSHEET

CITY/TOWN : Lunenburg, MA COUNT DATE : Jul-15

DISTRICT : 3

~ SEGMENT DATA ~

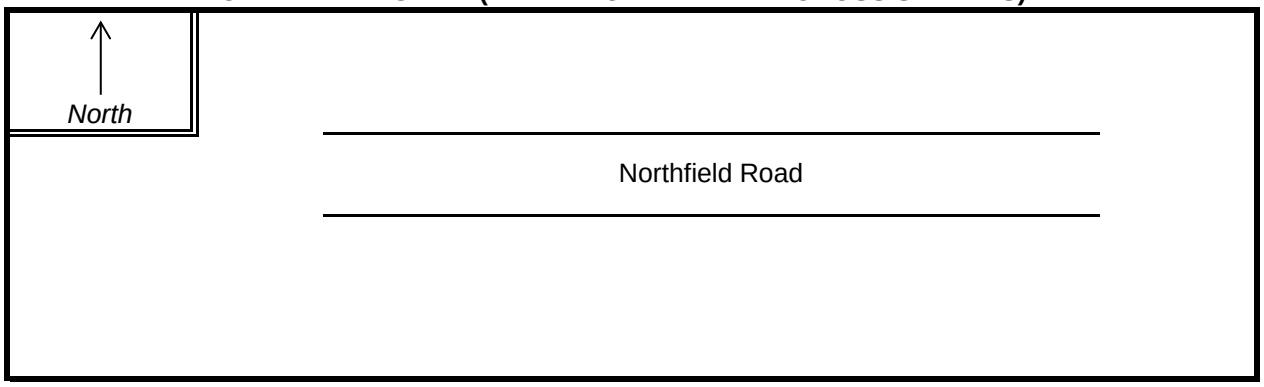
ROADWAY NAME: Northfield Road

START POINT: New West Townsend Road

END POINT: Chase Road (Route 13)

FUNCTIONAL CLASSIFICATION OF ROADWAY: Urban Local Road

ROADWAY DIAGRAM (LABEL ROADWAY AND CROSS STREETS)



AVERAGE DAILY TRAFFIC

SEGMENT LENGTH IN MILES (**L**):	**1.15**
AVERAGE DAILY TRAFFIC VOLUME (**V**):	1,590

TOTAL # OF CRASHES:	3	# OF YEARS :	3	AVERAGE # OF CRASHES PER YEAR (**A**) :	**1.00**

CRASH RATE CALCULATION : **1.50**

$$\text{RATE} = \frac{(A * 1{,}000{,}000)}{(L * V * 365)}$$

Comments :

Project Title & Date: PARE Project No. 15096.00 Jul-15

Appendix C

Speed Data

Pare Corporation

8 Blackstone Valley Place
Lincoln, RI 02865
www.parecorp.com

Roadway: Northfield Road
Location: Proposed Driveway
Weather: Sunny, Dry, Warm
Taken By: CR

File Name : Northfield Speed Study
Site Code : 15096001
Start Date : 7/15/2015
Page No : 1

#	Westbound	Eastbound
1	33	25
2	36	32
3	31	30
4	21	32
5	27	40
6	41	31
7	35	30
8	33	32
9	34	32
10	32	43
11	34	39
12	33	35
13	32	33
14	30	39
15	37	
16	30	
17	30	
18	31	
19	30	
20	43	
21	33	
22	37	
23	39	
24	33	
25	41	
26		

Class	Vehicle Count	10 MPH Pace Speed	Number in Pace	Percent in Pace	Average Speed	Number of Vehicles Over 30 MPH	Percent of Vehicles Over 30 MPH	True Median (50th Percentile)	85 Percentile
Westbound	25	30 - 39	20	80	33	19	76	33	37
Eastbound	14	30 - 39	11	79	34	11	79	32	39
Summary	39	30 - 39	31	79	34	30	77	33	39

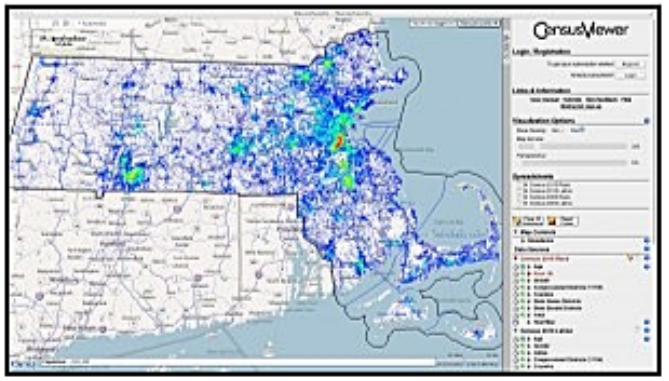
Appendix D

Census Data

Lunenburg, Massachusetts Population: Census 2010 and 2000 Interactive Map, Demographics, Statistics, Quick Facts

Compare population statistics about Lunenburg, MA by race, age, gender, Latino/Hispanic origin etc. CensusViewer delivers detailed demographics and population statistics from the 2010 Census, 2000 Census, American Community Survey (ACS), registered voter files, commercial data sources and more.

Experience breakthrough technology for census data discovery, population analysis and visualization over Bing Maps. Visually "fly over" a state, viewing in great detail the census blocks, census tracts, cities, counties and various political districts in your selection or "zoom down" to the street level to get demographic statistics and information about the population in an individual census block or census tract.



Reports for Lunenburg, Massachusetts

Click on any map link to see our blazing-fast data visualization over Bing Maps in action. Read more about the unprecedented demographic insight and analytical power of CensusViewer interactive maps.

CensusViewer maps, data and statistics pages for all states, counties and cities.

Lunenburg, Massachusetts - Overview	2010 Census		2000 Census		2000-2010 Change	
	Counts	Percentages	Counts	Percentages	Change	Percentages
Total Population	1,760	100.00%	1,695	100.00%	65	3.83%
Population by Race						
American Indian and Alaska native alone	6	0.34%	4	0.24%	2	50.00%

Appendix E

Trip Generation & Distribution

Highfield Village
Trip Generation Calculations
PARE Project No. 15096.00
July 30, 2015

Proposed: Single Family Residential Homes
Land Use Code: 210 Single-Family Detached Housing
Average Vehicle Trip Ends vs. Dwelling Units
Proposed: 67 Dwelling Units 67 Units

On a: Weekday

Average Rate:	9.52 * 67 =	638	
Fitted Curve Equation:	$e^{((0.92*\ln(67))+2.72)}$ =	**727**	
Trips Entering	50% * 727	363	
Trips Exiting	50% * 727	364	
		727	**Trips**

On a: Weekday, A.M. Peak Hour of Generator

Average Rate:	0.77 * 67 =	52	
Fitted Curve Equation:	0.70 * 67 +12.12 =	**59**	.
Trips Entering	26% * 59	15	
Trips Exiting	74% * 59	44	
		59	**Trips**

On a: Weekday, P.M. Peak Hour of Generator

Average Rate:	1.02 * 67 =	68	
Fitted Curve Equation:	$e^{((0.88*\ln(67))+0.62)}$ =	**75**	.
Trips Entering	64% * 75	48	
Trips Exiting	36% * 75	27	
		75	**Trips**

Computations by: TT

PAGE _____ OF _____

PARE CORPORATION

PROJECT Highfield Village TIA PROJECT NO. 15096.00

SUBJECT Trip Distribution

COMPUTATIONS BY AA DATE 6/28/15

CHECK BY _____ DATE _____

Per Northfield Road ATR:

PM peak = 148.5 (avg) / 1590 ⇒ **K = .0934**

AM Peak Distribution

→ 59 / 204 = 57% from west/ to east

← 45 / 204 = 43% from east/ to west

PM Peak Distribution

→ 59 / 145 = 41% from west/ to east

← 86 / 145 = 59% from east / to west

Per MTMC @ Chase Road

AM Peak Distr.

30 = 54%

28% = 15 ↗

39% = 21 →

33% = 18 ↘

← 12 = 22%

↖ 13 = 24%

PM Peak Distr.

29 = 29%

38% = 26 ↗

44% = 30 →

18% = 12 ↘

← 47 = 47%

↖ 24 = 24%

Per MTMC @ New West Townsend Road

AM Peak Distr.

8% = 4

↑ 0 = 0%

← 9 = 20%

43% = 23 → ← 37 = 80%

49% = 26

PM Peak Distr.

13% = 9

↑ 17 = 22%

← 27 = 35%

20% = 14 → ← 33 = 43%

67% = 46

Highfield Village TIA
Lunenburg, MA
Existing and Proposed Volumes
PARE Project No. 15096.00
July 30, 2015

2015-2022
NO-BUILD TRAFFIC VOLUMES
Future No-Build Growth Factor = 0.5%

Weekday AM Peak Hour
8:00 - 9:00 AM

Chase Road & Northfield Road

	2015 Existing	2022 No-Build
NB - LT	13	14
NB - T	238	247
NB - RT	13	14
SB - LT	6	7
SB - T	322	334
SB - RT	30	32
EB - LT	15	16
EB - T	21	22
EB - RT	18	19
WB - LT	18	19
WB - T	12	13
WB - RT	1	2

New West Townsend Road & Northfield Road

	2015 Existing	2022 No-Build
NB - LT	4	5
NB - T	12	13
NB - RT	26	27
SB - LT	4	5
SB - T	13	14
SB - RT	1	2
EB - LT	0	0
EB - T	23	24
EB - RT	4	5
WB - LT	37	39
WB - T	9	10
WB - RT	0	0

Weekday PM Peak Hour
4:45 - 5:45 PM

Chase Road & Northfield Road

	2015 Existing	2022 No-Build
NB - LT	24	25
NB - T	350	363
NB - RT	32	34
SB - LT	7	8
SB - T	332	344
SB - RT	29	31
EB - LT	26	27
EB - T	30	32
EB - RT	12	13
WB - LT	29	31
WB - T	47	49
WB - RT	7	8

New West Townsend Road & Northfield Road

	2015 Existing	2022 No-Build
NB - LT	10	11
NB - T	32	34
NB - RT	46	48
SB - LT	9	10
SB - T	26	27
SB - RT	3	4
EB - LT	6	7
EB - T	14	15
EB - RT	4	5
WB - LT	33	35
WB - T	27	28
WB - RT	17	18

Computation by: AA
Checked by:

2015-2022
BUILD TRAFFIC VOLUMES
Future Build = Future No-Build + Site Generated

Weekday AM Peak Hour
8:00 - 9:00 AM

Chase Road &
Northfield Road

	Site Generated	2022 Build
NB - LT	2	16
NB - T	0	247
NB - RT	0	14
SB - LT	0	7
SB - T	0	334
SB - RT	3	35
EB - LT	7	23
EB - T	10	32
EB - RT	8	27
WB - LT	0	19
WB - T	1	14
WB - RT	0	2

New West Townsend Road &
Northfield Road

	Site Generated	2022 Build
NB - LT	0	5
NB - T	0	13
NB - RT	4	31
SB - LT	1	6
SB - T	0	14
SB - RT	0	2
EB - LT	0	0
EB - T	4	28
EB - RT	0	5
WB - LT	15	54
WB - T	4	14
WB - RT	0	0

Weekday PM Peak Hour
4:45 - 5:45 PM

Chase Road &
Northfield Road

	Site Generated	2022 Build
NB - LT	7	32
NB - T	0	363
NB - RT	0	34
SB - LT	0	8
SB - T	0	344
SB - RT	8	39
EB - LT	4	31
EB - T	5	37
EB - RT	2	15
WB - LT	0	31
WB - T	13	62
WB - RT	0	8

New West Townsend Road &
Northfield Road

	Site Generated	2022 Build
NB - LT	0	11
NB - T	0	34
NB - RT	13	61
SB - LT	3	13
SB - T	0	27
SB - RT	0	4
EB - LT	0	7
EB - T	4	19
EB - RT	0	5
WB - LT	7	42
WB - T	6	34
WB - RT	3	21

Computation by: AA
Checked by:

Appendix F

Traffic Capacity Analysis

Intersection	
Int Delay, s/veh	5.7

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	23	4	37	9	0	4	12	26	4	13	1
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	84	84	84	77	77	77	81	81	81	75	75	75
Heavy Vehicles, %	0	9	0	0	0	0	0	0	0	0	8	0
Mvmt Flow	0	27	5	48	12	0	5	15	32	5	17	1

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	76	86	18	86	70	31	19	0	0	47	0	0
Stage 1	29	29	-	41	41	-	-	-	-	-	-	-
Stage 2	47	57	-	45	29	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.59	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.081	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	919	791	1066	905	824	1049	1611	-	-	1573	-	-
Stage 1	993	857	-	979	865	-	-	-	-	-	-	-
Stage 2	972	834	-	974	875	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	905	786	1066	873	819	1049	1611	-	-	1573	-	-
Mov Cap-2 Maneuver	905	786	-	873	819	-	-	-	-	-	-	-
Stage 1	990	854	-	976	862	-	-	-	-	-	-	-
Stage 2	956	831	-	936	872	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.5	0.7	1.6
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1611	-	-	818	862	1573	-	-
HCM Lane V/C Ratio	0.003	-	-	0.039	0.069	0.003	-	-
HCM Control Delay (s)	7.2	0	-	9.6	9.5	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	15	21	18	18	12	1	13	239	13	6	322	30
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	75	75	75	78	78	78	83	83	83	77	77	77
Heavy Vehicles, %	7	10	0	17	8	0	15	6	0	33	8	3
Mvmt Flow	20	28	24	23	15	1	16	288	16	8	418	39

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	788	788	438	806	800	296	457	0	0	304	0	0
Stage 1	453	453	-	327	327	-	-	-	-	-	-	-
Stage 2	335	335	-	479	473	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.6	6.2	7.27	6.58	6.2	4.25	-	-	4.43	-	-
Critical Hdwy Stg 1	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.09	3.3	3.653	4.072	3.3	2.335	-	-	2.497	-	-
Pot Cap-1 Maneuver	303	314	623	283	311	748	1039	-	-	1100	-	-
Stage 1	577	557	-	655	637	-	-	-	-	-	-	-
Stage 2	669	628	-	540	548	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	284	305	623	248	302	748	1039	-	-	1100	-	-
Mov Cap-2 Maneuver	284	305	-	248	302	-	-	-	-	-	-	-
Stage 1	566	551	-	643	625	-	-	-	-	-	-	-
Stage 2	639	616	-	488	543	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	17.5	20.4	0.4	0.1
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1039	-	-	359	273	1100	-	-
HCM Lane V/C Ratio	0.015	-	-	0.201	0.146	0.007	-	-
HCM Control Delay (s)	8.5	0	-	17.5	20.4	8.3	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.7	0.5	0	-	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	6	14	4	33	27	17	10	32	46	9	26	3
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	86	86	86	74	74	74	88	88	88	79	79	79
Heavy Vehicles, %	17	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	7	16	5	45	36	23	11	36	52	11	33	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	173	169	35	153	144	63	37	0	0	89	0	0
Stage 1	58	58	-	85	85	-	-	-	-	-	-	-
Stage 2	115	111	-	68	59	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	758	728	1044	819	751	1007	1587	-	-	1519	-	-
Stage 1	917	851	-	928	828	-	-	-	-	-	-	-
Stage 2	855	807	-	947	850	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	705	718	1044	793	741	1007	1587	-	-	1519	-	-
Mov Cap-2 Maneuver	705	718	-	793	741	-	-	-	-	-	-	-
Stage 1	911	845	-	922	822	-	-	-	-	-	-	-
Stage 2	793	801	-	918	844	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10	10.1	0.8	1.7
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1587	-	-	754	811	1519	-	-
HCM Lane V/C Ratio	0.007	-	-	0.037	0.128	0.007	-	-
HCM Control Delay (s)	7.3	0	-	10	10.1	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	26	30	12	29	47	7	24	350	32	7	332	29
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	63	63	63	94	94	94	98	98	98	81	81	81
Heavy Vehicles, %	0	7	0	0	2	14	8	2	0	0	3	3
Mvmt Flow	41	48	19	31	50	7	24	357	33	9	410	36

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	896	884	428	900	885	373	446	0	0	390	0	0
Stage 1	445	445	-	422	422	-	-	-	-	-	-	-
Stage 2	451	439	-	478	463	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.57	6.2	7.1	6.52	6.34	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.063	3.3	3.5	4.018	3.426	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	263	279	631	262	284	647	1083	-	-	1180	-	-
Stage 1	596	566	-	613	588	-	-	-	-	-	-	-
Stage 2	592	570	-	572	564	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	217	268	631	213	273	647	1083	-	-	1180	-	-
Mov Cap-2 Maneuver	217	268	-	213	273	-	-	-	-	-	-	-
Stage 1	579	560	-	596	572	-	-	-	-	-	-	-
Stage 2	519	554	-	502	558	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	26.8	25.8	0.5	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1083	-	-	271	260	1180	-	-
HCM Lane V/C Ratio	0.023	-	-	0.398	0.34	0.007	-	-
HCM Control Delay (s)	8.4	0	-	26.8	25.8	8.1	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.8	1.4	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	24	5	39	10	0	5	13	27	5	14	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	9	0	0	0	0	0	0	0	0	8	0
Mvmt Flow	0	26	5	42	11	0	5	14	29	5	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	72	81	16	83	68	29	17	0	0	43	0	0
Stage 1	27	27	-	40	40	-	-	-	-	-	-	-
Stage 2	45	54	-	43	28	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.59	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.081	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	924	796	1069	909	826	1052	1613	-	-	1579	-	-
Stage 1	996	859	-	980	866	-	-	-	-	-	-	-
Stage 2	974	836	-	976	876	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	910	791	1069	878	821	1052	1613	-	-	1579	-	-
Mov Cap-2 Maneuver	910	791	-	878	821	-	-	-	-	-	-	-
Stage 1	993	856	-	977	863	-	-	-	-	-	-	-
Stage 2	959	833	-	939	873	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.5	9.4	0.8	1.7
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1613	-	-	828	866	1579	-	-
HCM Lane V/C Ratio	0.003	-	-	0.038	0.062	0.003	-	-
HCM Control Delay (s)	7.2	0	-	9.5	9.4	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.2	0	-	-

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	16	22	19	19	13	2	14	247	14	7	334	32
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	10	0	17	8	0	15	6	0	33	8	3
Mvmt Flow	17	24	21	21	14	2	15	268	15	8	363	35

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	711	710	380	725	720	276	398	0	0	284	0	0
Stage 1	396	396	-	307	307	-	-	-	-	-	-	-
Stage 2	315	314	-	418	413	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.6	6.2	7.27	6.58	6.2	4.25	-	-	4.43	-	-
Critical Hdwy Stg 1	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.09	3.3	3.653	4.072	3.3	2.335	-	-	2.497	-	-
Pot Cap-1 Maneuver	341	349	671	322	347	768	1093	-	-	1120	-	-
Stage 1	620	590	-	672	650	-	-	-	-	-	-	-
Stage 2	685	642	-	584	583	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	323	340	671	290	338	768	1093	-	-	1120	-	-
Mov Cap-2 Maneuver	323	340	-	290	338	-	-	-	-	-	-	-
Stage 1	610	585	-	661	640	-	-	-	-	-	-	-
Stage 2	657	632	-	538	578	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	15.6	17.8	0.4	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1093	-	-	400	319	1120	-	-
HCM Lane V/C Ratio	0.014	-	-	0.155	0.116	0.007	-	-
HCM Control Delay (s)	8.3	0	-	15.6	17.8	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.5	0.4	0	-	-

Intersection	
Int Delay, s/veh	5.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	15	5	35	28	18	11	34	48	10	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	16	5	38	30	20	12	37	52	11	29	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	165	166	32	151	142	63	34	0	0	89	0	0
Stage 1	53	53	-	87	87	-	-	-	-	-	-	-
Stage 2	112	113	-	64	55	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	767	730	1048	821	753	1007	1591	-	-	1519	-	-
Stage 1	923	855	-	926	827	-	-	-	-	-	-	-
Stage 2	858	806	-	952	853	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	720	719	1048	793	742	1007	1591	-	-	1519	-	-
Mov Cap-2 Maneuver	720	719	-	793	742	-	-	-	-	-	-	-
Stage 1	916	849	-	919	820	-	-	-	-	-	-	-
Stage 2	804	800	-	922	847	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.9	10	0.9	1.8
HCM LOS	A	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	764	812	1519	-	-
HCM Lane V/C Ratio	0.008	-	-	0.038	0.108	0.007	-	-
HCM Control Delay (s)	7.3	0	-	9.9	10	7.4	0	-
HCM Lane LOS	A	A	-	A	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-

Intersection	
Int Delay, s/veh	4.5

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	27	32	13	31	49	8	25	363	34	8	344	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	0	2	14	8	2	0	0	3	3
Mvmt Flow	29	35	14	34	53	9	27	395	37	9	374	34

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	906	894	391	900	892	413	408	0	0	432	0	0
Stage 1	408	408	-	467	467	-	-	-	-	-	-	-
Stage 2	498	486	-	433	425	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.57	6.2	7.1	6.52	6.34	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.063	3.3	3.5	4.018	3.426	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	259	275	662	262	281	614	1119	-	-	1138	-	-
Stage 1	624	588	-	580	562	-	-	-	-	-	-	-
Stage 2	558	543	-	605	586	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	210	264	662	223	269	614	1119	-	-	1138	-	-
Mov Cap-2 Maneuver	210	264	-	223	269	-	-	-	-	-	-	-
Stage 1	604	582	-	561	544	-	-	-	-	-	-	-
Stage 2	480	526	-	551	580	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	24	26.3	0.5	0.2
HCM LOS	C	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1119	-	-	267	263	1138	-	-
HCM Lane V/C Ratio	0.024	-	-	0.293	0.364	0.008	-	-
HCM Control Delay (s)	8.3	0	-	24	26.3	8.2	0	-
HCM Lane LOS	A	A	-	C	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.2	1.6	0	-	-

Intersection	
Int Delay, s/veh	6.1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	0	28	5	54	14	0	5	13	31	6	14	2
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	9	0	0	0	0	0	0	0	0	8	0
Mvmt Flow	0	30	5	59	15	0	5	14	34	7	15	2

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	78	88	16	89	72	31	17	0	0	48	0	0
Stage 1	29	29	-	42	42	-	-	-	-	-	-	-
Stage 2	49	59	-	47	30	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.59	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.59	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.081	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	916	789	1069	901	822	1049	1613	-	-	1572	-	-
Stage 1	993	857	-	978	864	-	-	-	-	-	-	-
Stage 2	969	832	-	972	874	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	898	783	1069	865	816	1049	1613	-	-	1572	-	-
Mov Cap-2 Maneuver	898	783	-	865	816	-	-	-	-	-	-	-
Stage 1	990	854	-	975	861	-	-	-	-	-	-	-
Stage 2	949	830	-	929	871	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	9.6	9.6	0.7	2
HCM LOS	A	A		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1613	-	-	816	854	1572	-	-
HCM Lane V/C Ratio	0.003	-	-	0.044	0.087	0.004	-	-
HCM Control Delay (s)	7.2	0	-	9.6	9.6	7.3	0	-
HCM Lane LOS	A	A	-	A	A	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-

Intersection	
Int Delay, s/veh	2.9

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	23	32	27	19	14	2	16	247	14	7	334	35
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	7	10	0	17	8	0	15	6	0	33	8	3
Mvmt Flow	25	35	29	21	15	2	17	268	15	8	363	38

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	717	715	382	740	727	276	401	0	0	284	0	0
Stage 1	397	397	-	311	311	-	-	-	-	-	-	-
Stage 2	320	318	-	429	416	-	-	-	-	-	-	-
Critical Hdwy	7.17	6.6	6.2	7.27	6.58	6.2	4.25	-	-	4.43	-	-
Critical Hdwy Stg 1	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.17	5.6	-	6.27	5.58	-	-	-	-	-	-	-
Follow-up Hdwy	3.563	4.09	3.3	3.653	4.072	3.3	2.335	-	-	2.497	-	-
Pot Cap-1 Maneuver	338	347	670	314	343	768	1091	-	-	1120	-	-
Stage 1	619	590	-	669	648	-	-	-	-	-	-	-
Stage 2	681	639	-	576	582	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	318	337	670	271	333	768	1091	-	-	1120	-	-
Mov Cap-2 Maneuver	318	337	-	271	333	-	-	-	-	-	-	-
Stage 1	607	585	-	656	636	-	-	-	-	-	-	-
Stage 2	650	627	-	513	577	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	16.8	18.5	0.5	0.2
HCM LOS	C	C		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1091	-	-	395	305	1120	-	-
HCM Lane V/C Ratio	0.016	-	-	0.226	0.125	0.007	-	-
HCM Control Delay (s)	8.4	0	-	16.8	18.5	8.2	0	-
HCM Lane LOS	A	A	-	C	C	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.9	0.4	0	-	-

Intersection	
Int Delay, s/veh	2.6

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	62	9	6	47	19	25
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	67	10	7	51	21	27

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	77	0	136	72
Stage 1	-	-	-	-	72	-
Stage 2	-	-	-	-	64	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1522	-	862	996
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	964	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1522	-	858	996
Mov Cap-2 Maneuver	-	-	-	-	858	-
Stage 1	-	-	-	-	956	-
Stage 2	-	-	-	-	959	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.1
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	931	-	-	1522	-
HCM Lane V/C Ratio	0.051	-	-	0.004	-
HCM Control Delay (s)	9.1	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.2	-	-	0	-

Intersection	
Int Delay, s/veh	5.3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	7	19	5	42	34	21	11	34	61	13	27	4
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	17	0	0	0	0	0	0	0	0	0	0	0
Mvmt Flow	8	21	5	46	37	23	12	37	66	14	29	4

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	184	187	32	167	156	70	34	0	0	103	0	0
Stage 1	60	60	-	94	94	-	-	-	-	-	-	-
Stage 2	124	127	-	73	62	-	-	-	-	-	-	-
Critical Hdwy	7.27	6.5	6.2	7.1	6.5	6.2	4.1	-	-	4.1	-	-
Critical Hdwy Stg 1	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.27	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.653	4	3.3	3.5	4	3.3	2.2	-	-	2.2	-	-
Pot Cap-1 Maneuver	745	711	1048	802	740	998	1591	-	-	1502	-	-
Stage 1	915	849	-	918	821	-	-	-	-	-	-	-
Stage 2	845	795	-	942	847	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	690	698	1048	769	727	998	1591	-	-	1502	-	-
Mov Cap-2 Maneuver	690	698	-	769	727	-	-	-	-	-	-	-
Stage 1	908	841	-	911	814	-	-	-	-	-	-	-
Stage 2	782	789	-	905	839	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	10.1	10.2	0.8	2.2
HCM LOS	B	B		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1591	-	-	736	792	1502	-	-
HCM Lane V/C Ratio	0.008	-	-	0.046	0.133	0.009	-	-
HCM Control Delay (s)	7.3	0	-	10.1	10.2	7.4	0	-
HCM Lane LOS	A	A	-	B	B	A	A	-
HCM 95th %tile Q(veh)	0	-	-	0.1	0.5	0	-	-

Intersection	
Int Delay, s/veh	5.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Vol, veh/h	31	37	15	31	62	8	32	363	34	8	344	39
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	92	92	92	92	92	92	92	92	92	92	92	92
Heavy Vehicles, %	0	7	0	0	2	14	8	2	0	0	3	3
Mvmt Flow	34	40	16	34	67	9	35	395	37	9	374	42

Major/Minor	Minor2			Minor1			Major1			Major2		
Conflicting Flow All	934	914	395	924	917	413	416	0	0	432	0	0
Stage 1	413	413	-	483	483	-	-	-	-	-	-	-
Stage 2	521	501	-	441	434	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.57	6.2	7.1	6.52	6.34	4.18	-	-	4.1	-	-
Critical Hdwy Stg 1	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.57	-	6.1	5.52	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.063	3.3	3.5	4.018	3.426	2.272	-	-	2.2	-	-
Pot Cap-1 Maneuver	248	268	659	252	272	614	1111	-	-	1138	-	-
Stage 1	620	585	-	569	553	-	-	-	-	-	-	-
Stage 2	542	534	-	599	581	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	188	254	659	208	258	614	1111	-	-	1138	-	-
Mov Cap-2 Maneuver	188	254	-	208	258	-	-	-	-	-	-	-
Stage 1	594	579	-	545	530	-	-	-	-	-	-	-
Stage 2	447	512	-	538	575	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	27.5	30	0.6	0.2
HCM LOS	D	D		

Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR
Capacity (veh/h)	1111	-	-	249	251	1138	-	-
HCM Lane V/C Ratio	0.031	-	-	0.362	0.437	0.008	-	-
HCM Control Delay (s)	8.3	0	-	27.5	30	8.2	0	-
HCM Lane LOS	A	A	-	D	D	A	A	-
HCM 95th %tile Q(veh)	0.1	-	-	1.6	2.1	0	-	-

Intersection	
Int Delay, s/veh	2.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Vol, veh/h	62	20	28	90	16	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	0	0
Mvmt Flow	67	22	30	98	17	12

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	89	0	237	78
Stage 1	-	-	-	-	78	-
Stage 2	-	-	-	-	159	-
Critical Hdwy	-	-	4.12	-	6.4	6.2
Critical Hdwy Stg 1	-	-	-	-	5.4	-
Critical Hdwy Stg 2	-	-	-	-	5.4	-
Follow-up Hdwy	-	-	2.218	-	3.5	3.3
Pot Cap-1 Maneuver	-	-	1506	-	756	988
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	875	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1506	-	740	988
Mov Cap-2 Maneuver	-	-	-	-	740	-
Stage 1	-	-	-	-	950	-
Stage 2	-	-	-	-	857	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.8	9.5
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	824	-	-	1506	-
HCM Lane V/C Ratio	0.036	-	-	0.02	-
HCM Control Delay (s)	9.5	-	-	7.4	0
HCM Lane LOS	A	-	-	A	A
HCM 95th %tile Q(veh)	0.1	-	-	0.1	-